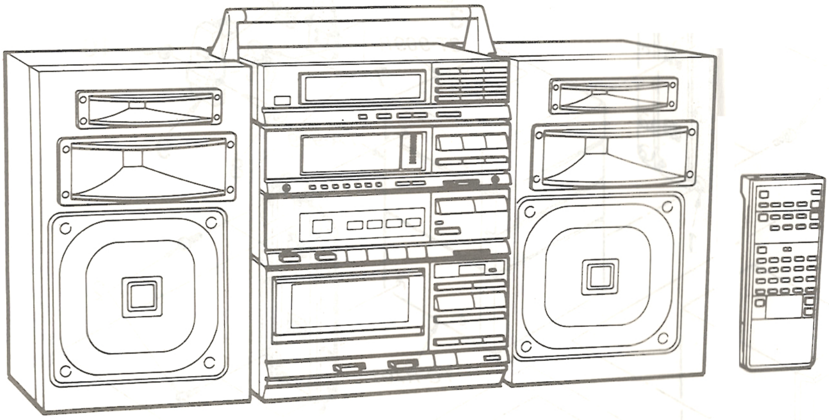
FH-909R

SERVICE MANUAL

REVISED

E Model
West Germany Model



- FH-909R is composed of following models. As for the service manual, it is issued for each component model, then, please refer to it.

COMPONENT MODEL NAME FOR FH-909R

TUNER	ST-909R
CASSETTE DECK	TC-R707
AMPLIFIER	TA-909
SPEAKER SYSTEM	(West Germany)..APM-909A
	(E) APM-909

ACCESSORIES SUPPLIED

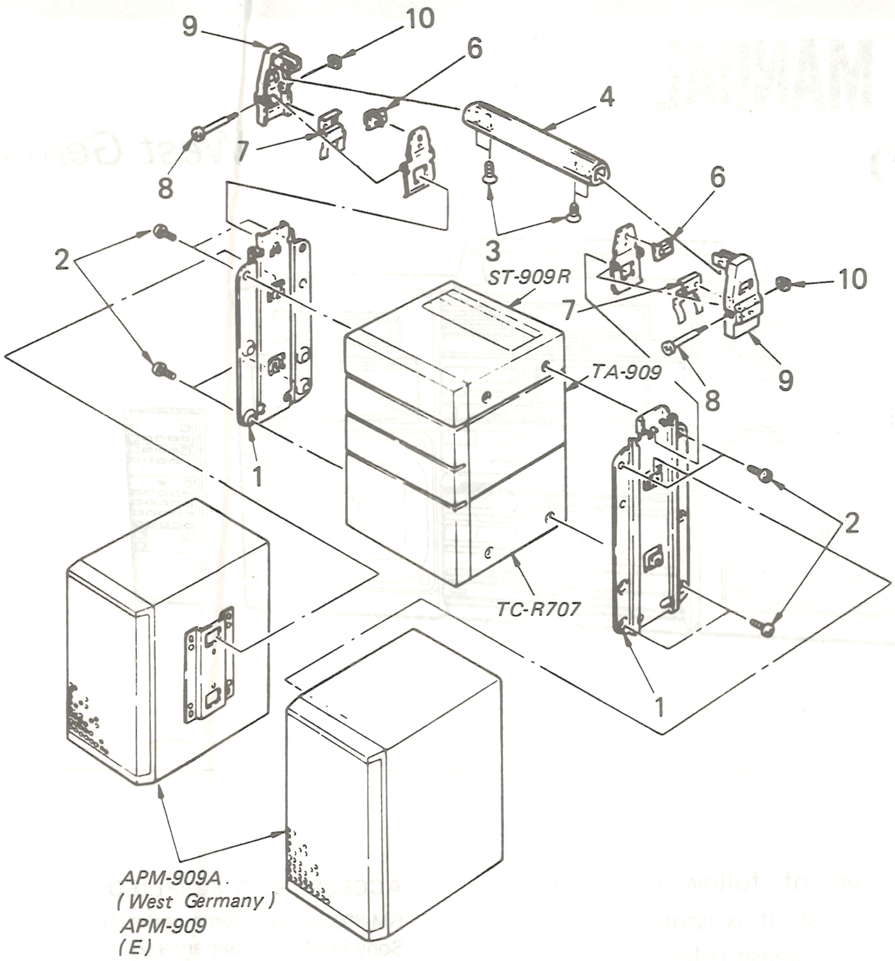
RM-809 Remote Commander (1)
Sony SUM-3(NS) batteries (2)
Flat cord (1)
CD player connecting cord (1)
Carrying handle (1)
Mounting blackets (2)
Mounting screws (10)

MICROFILM

COMPACT HI-DENSITY COMPONENT SYSTEM

SONY®

EXPLODED VIEW AND PARTS LIST



No.	Part No.	Description	Remarks
1	4-920-120-01	PLATE (A), SIDE	
2	X-4910-086-1	SCREW ASSY, SIDE PLATE	
3	7-685-247-19	SCREW +KTP 3X10 TYPE2 SLIT	
4	2-249-402-21	HANDLE	
5	....		
6	4-884-803-12	PUSH BUTTON	
7	4-902-942-03	SPRING, LEAF	
8	4-884-805-21	SHAFT	
9	4-910-361-11	HOLDER, HANDLE	
10	4-884-801-11	NUT, PLATE	

APM-909 & 909A PACKING MARTERIAL

4-920-121-01	CUSHION
4-920-151-01	SHEET, PROTECTION

ACCESSORY & PACKING MATERIAL

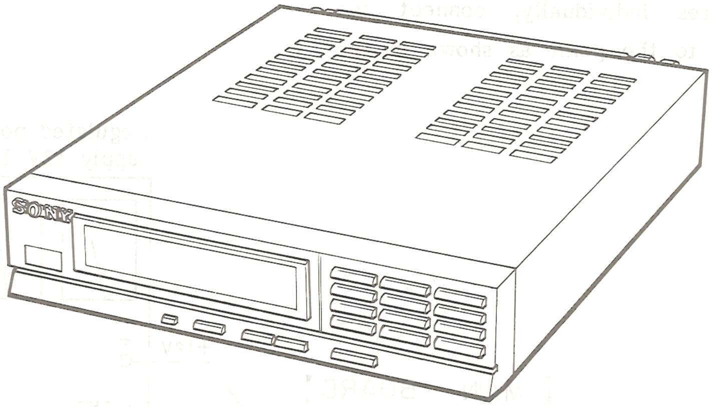
Part No.	Description
1-463-997-11	REMOTE COMMANDER (RM-809)
1-558-233-11	CORD (WITH CONNECTOR) (SIRCS) 4P
1-559-821-11	CORD (WITH CONNECTOR)
2-394-123-01	COVER, BATTERY
3-769-867-11	(E).............MANUAL, INSTRUCTION
3-769-867-41	(West Germany)...MANUAL, INSTRUCTION
*4-922-762-01	(E).............INDIVIDUAL CARTON
*4-922-764-01	(West Germany)...INDIVIDUAL CARTON
*4-925-560-01	CUSHION, UPPER
*4-925-561-01	CUSHION, LOWER

Sony Corporation
Audio Group

ST-909R

SERVICE MANUAL

West Germany Model



- ST-909R is the FM STEREO/ FM-AM TUNER in FH-909R.

SPECIFICATIONS

System	FM stereo, FM/AM superheterodyne tuner Quartz-locked PLL digital synthesizer system

FM tuner section

Tuning range	87.5 to 108 MHz
Antenna	Telescopic antenna
Antenna terminals	75 ohms unbalanced
Intermediate frequency	10.7 MHz
Usable sensitivity	2.3 μV (S/N = 30 dB/75 ohms)

MW/LW tuner section

		MW	LW
Tuning range		531 – 1602 kHz (except Italian model) 522 – 1611 kHz (for the Italian model)	153 – 281 kHz (except Italian model) 144 – 288 kHz (for the Italian model)
Antenna		Built-in ferrite bar antenna External antenna terminal	
Usable sensitivity	Built-in ferrite bar antenna	250 μV/m (999 kHz)	500 μV/m (230 kHz)
	External antenna	100 μV (999 kHz)	150 μV (230 kHz)

General

Dimensions	Approx. 220 × 55 × 240 mm (w/h/d) ($8^3/_4 \times 2^1/_4 \times 9^1/_2$ inches) incl. projecting parts and controls
Weight	Approx. 1.0 kg (2 lb 4 oz) net

MICROFILM

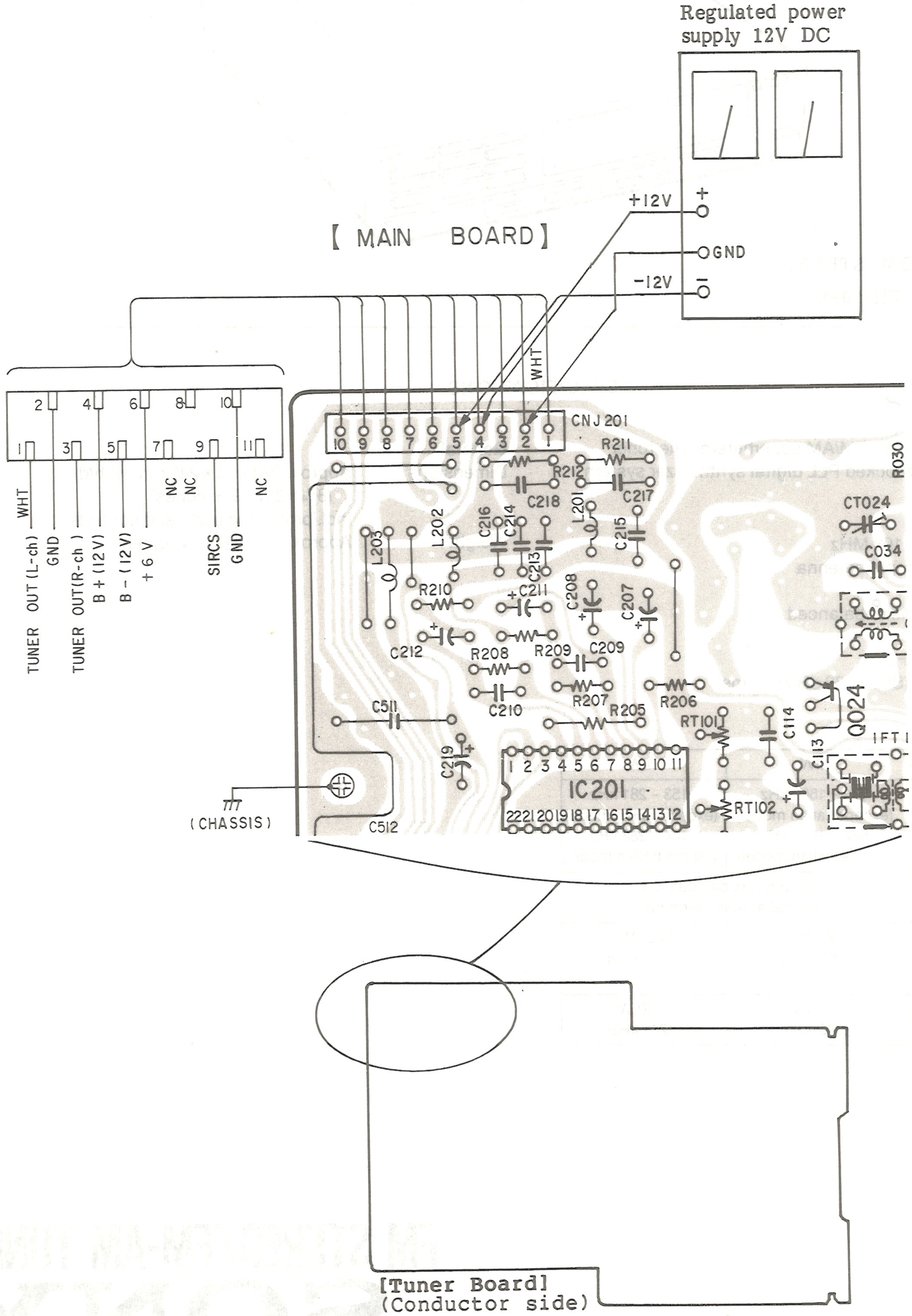
FM STEREO/FM-AM TUNER

SONY®

REPAIRING PRECAUTION

[To apply B+voltage]

The power of this units is fed from other unit. When the unit operates individually, connect the regulated power supply to the point as shown in the below figure.


Regulated power supply 12V DC
+
+12V
GND
-12V
−
【 MAIN BOARD 】
WHT
CNJ 201
10 9 8 7 6 5 4 3 2 1
2 4 6 8 10
1 3 5 7 9 11
WHT
TUNER OUT (L-ch)
GND
TUNER OUT (R-ch)
B+ (12V)
B− (12V)
+6 V
NC
NC
SIRCS
GND
NC
R211
R212
C218
C217
R030
CT024
C034
L201
L202
L203
C216
C214
C213
C215
R210
C211
C208
C207
C212
R208
R209
C209
C210
R207
R205
R206
C511
RT101
C114
C113
Q024
IFT
C219
IC201
1 2 3 4 5 6 7 8 9 10 11
22 21 20 19 18 17 16 15 14 13 12
RT102
(CHASSIS)
C512
[Tuner Board]
(Conductor side)

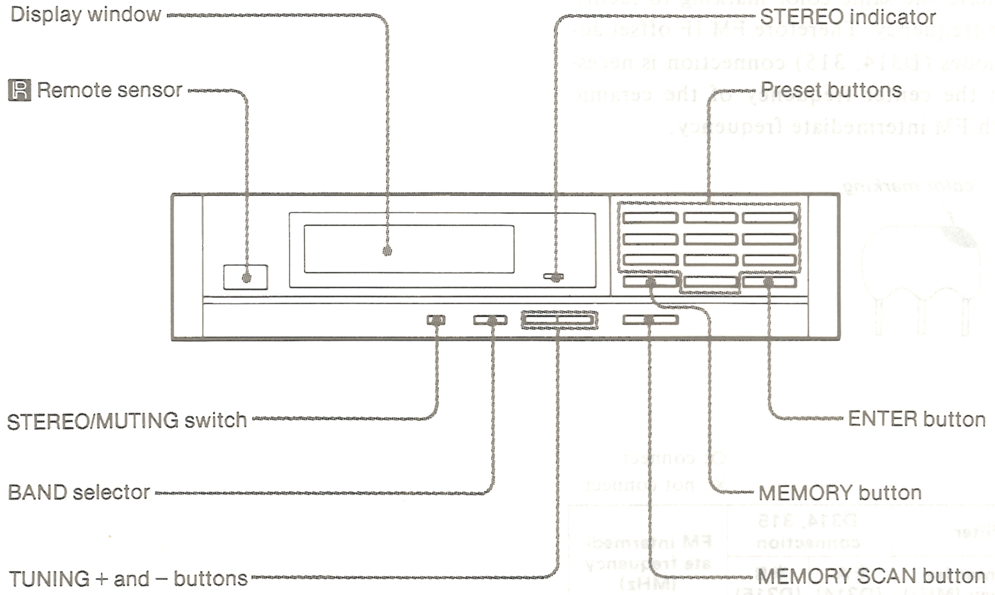
MODEL IDENTIFICATION

SONY MODEL NO. ST-909R

FM STEREO/FM-AM TUNER

SECTION 1
GENERAL

PARTS IDENTIFICATION


Display window
Remote sensor
STEREO indicator
Preset buttons
STEREO/MUTING switch
ENTER button
BAND selector
MEMORY button
TUNING + and – buttons
MEMORY SCAN button

SECTION 2
ELECTRICAL ADJUSTMENTS

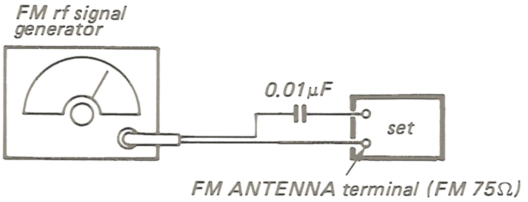
FM SECTION

Setting:

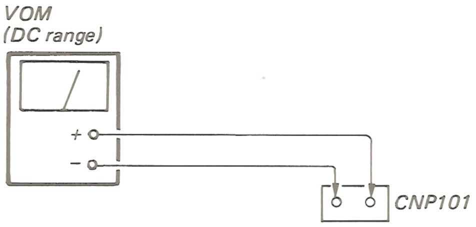
BAND selector switch: FM

FM Discriminator Alignment (NULL Check)

Setting:

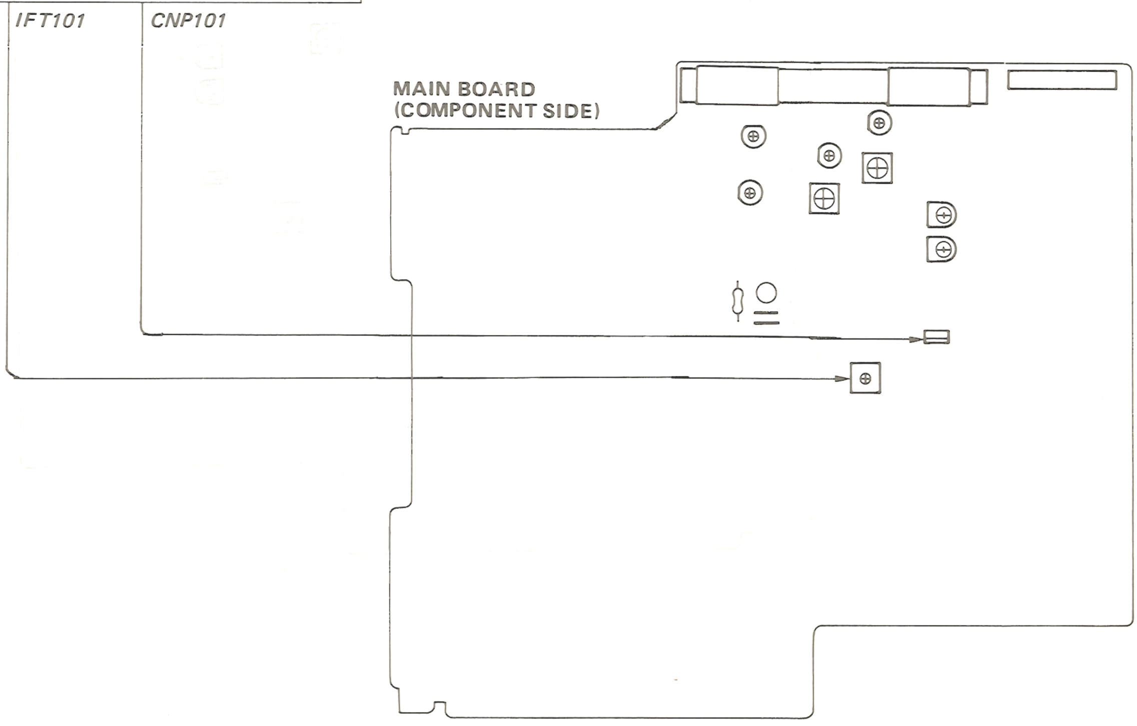

FM rf signal generator
0.01μF
set
FM ANTENNA terminal (FM 75Ω)

Carrier frequency:	*98 MHz*
Modulation:	*1 kHz, 75 kHz deviation*
Output level:	*1 mV (60 dB)*


VOM
(DC range)
+
−
CNP101

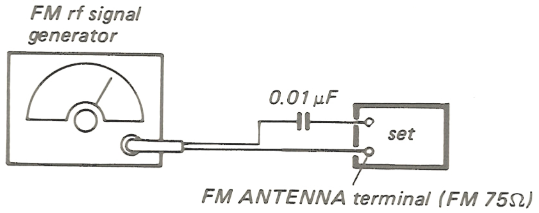
Procedure:

1. Push the TUNING (+, −) button for 98 MHz.
2. Adjust IFT101 for 0 V reading on the VOM.


IFT101
CNP101
MAIN BOARD
(COMPONENT SIDE)

FM TUNED Indication Lighting Level Adjustment

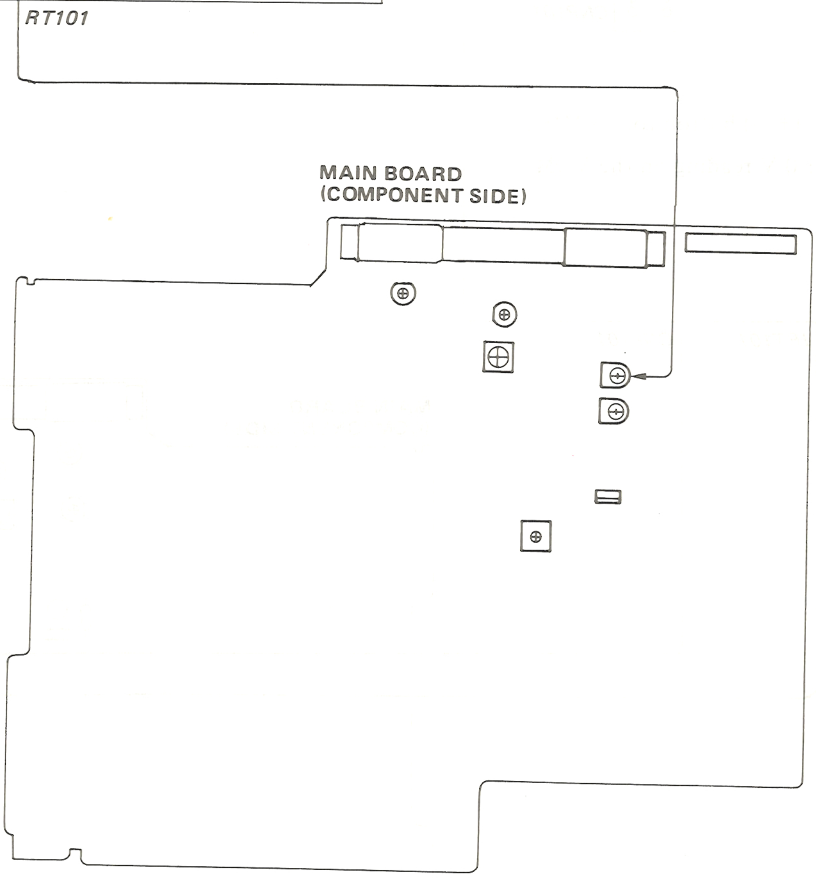
Setting:


FM rf signal generator
0.01 µF
set
FM ANTENNA terminal (FM 75Ω)

Carrier frequency:	*98 MHz*
Modulation:	*1 kHz, 75 kHz deviation*
Output level:	*22.4µV (27 dB)*

Procedure:

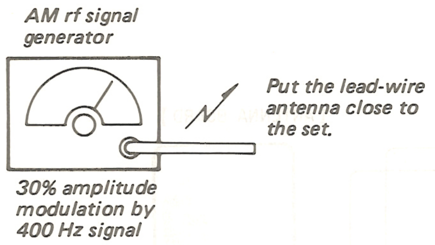
1. Confirm that the MUTING indicator lights up on the display window.
2. Tune the set to 98 MHz.
3. Adjust RT101 so that the TUNED indicator goes on.


RT101
MAIN BOARD
(COMPONENT SIDE)

AM SECTION

Setting:

BAND selector switch: MW or LW

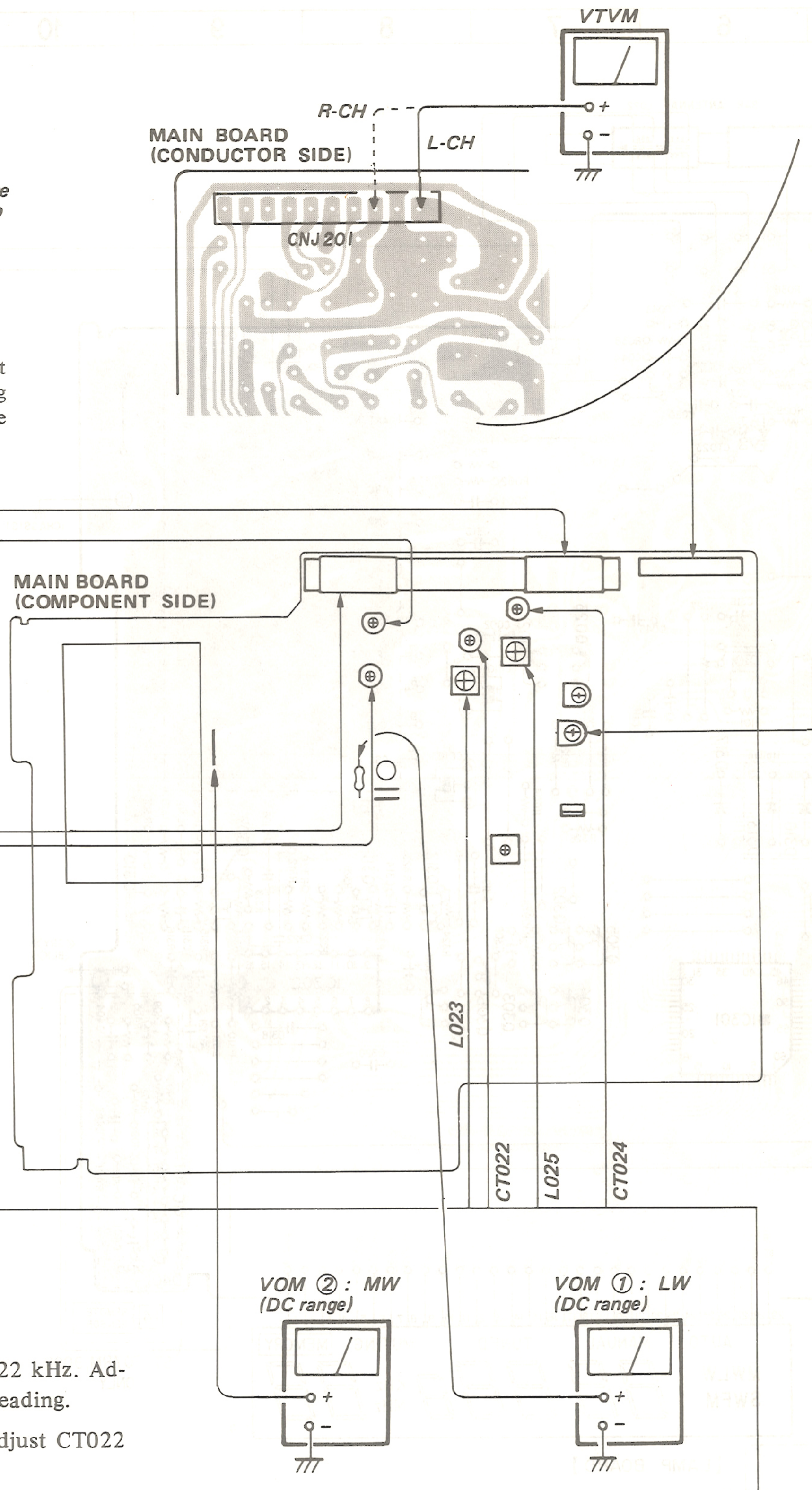

AM rf signal generator
Put the lead-wire antenna close to the set.
30% amplitude modulation by 400 Hz signal

- Repeat the procedures in each adjustment several times, and the OSC voltage and tracking adjustments should be finally done by the trimmer capacitors.

- **Perform after LW TRACKING ADJUSMENT.**

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
603 kHz	L022
1,404 kHz	CT021

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
162 kHz	L022
270 kHz	CT023


VTVM
R-CH
L-CH
MAIN BOARD (CONDUCTOR SIDE)
CNJ201
MAIN BOARD (COMPONENT SIDE)
L023
CT022
L025
CT024
VOM ②: MW (DC range)
VOM ①: LW (DC range)
RT102

MW/LW OSC Voltage Adjustment

Procedure:

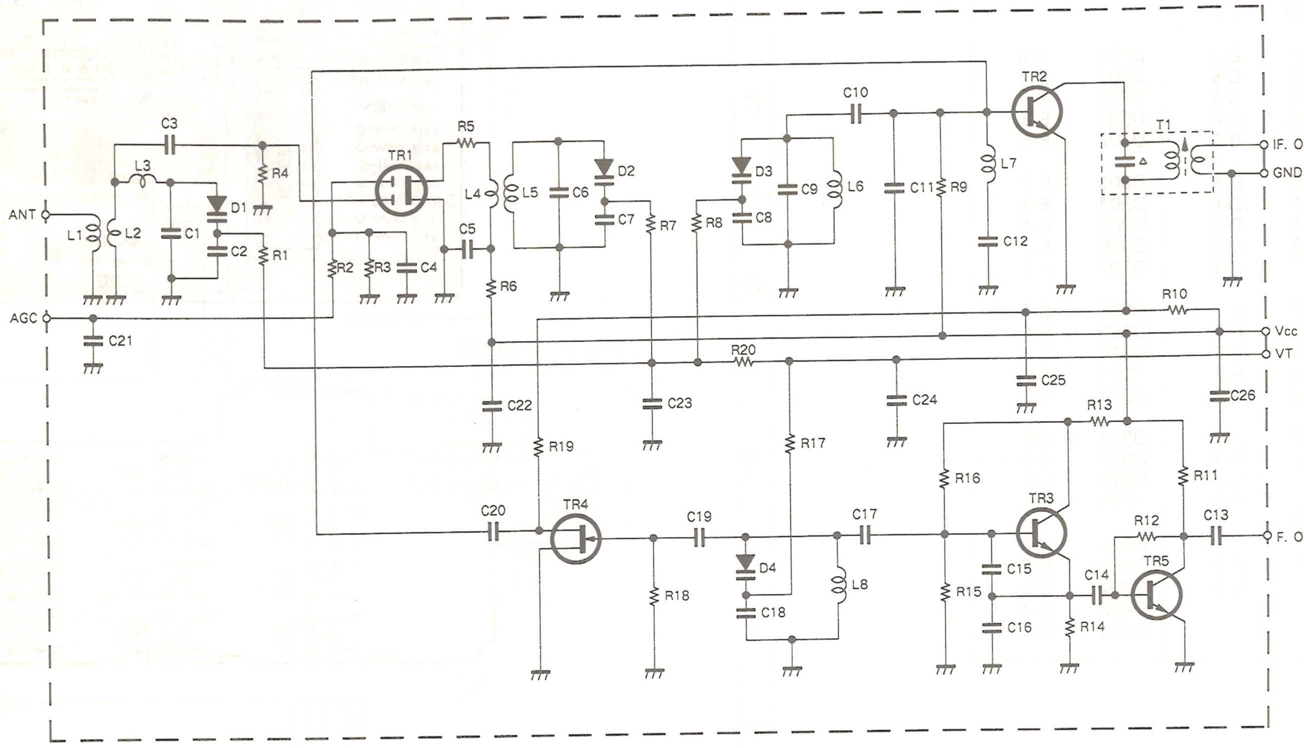
1. Set BAND selector switch to MW.
2. Push TUNING (+, –) button for 522 kHz. Adjust L023 for 1 – 1.1 V VOM ② reading.
3. Push the button for 1,611 kHz. Adjust CT022 for 8 – 8.5 V VOM ② reading.
4. Set BAND selector switch to LW.
5. Push TUNING (+, –) button for 144 kHz. Adjust L025 for 1 – 1.1 V VOM ① reading.
6. Push the button for 288 kHz. Adjust CT024 for 8 – 8.5 V VOM ① reading.

AM Tuned Indication Lighting Level Adjustment

BAND select switch: AM

1. Output 0.7 mV (57 dB), 1,000 kHz from AM rf signal generator.
2. Adjust RT102 so that the LED lights up.

• FM FRONT END (FE1) SCHEMATIC DIAGRAM


ANT
AGC
L1
L2
L3
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
D1
D2
D3
D4
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
L4
L5
L6
L7
L8
TR1
TR2
TR3
TR4
TR5
T1
IF. OUT
GND
Vcc
VT
F. OUT

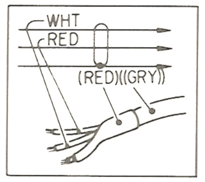
SECTION 3
DIAGRAMS

3-1. PRINTED WIRING BOARDS

. See page 14 for Semiconductor Lead Layouts.

Note:

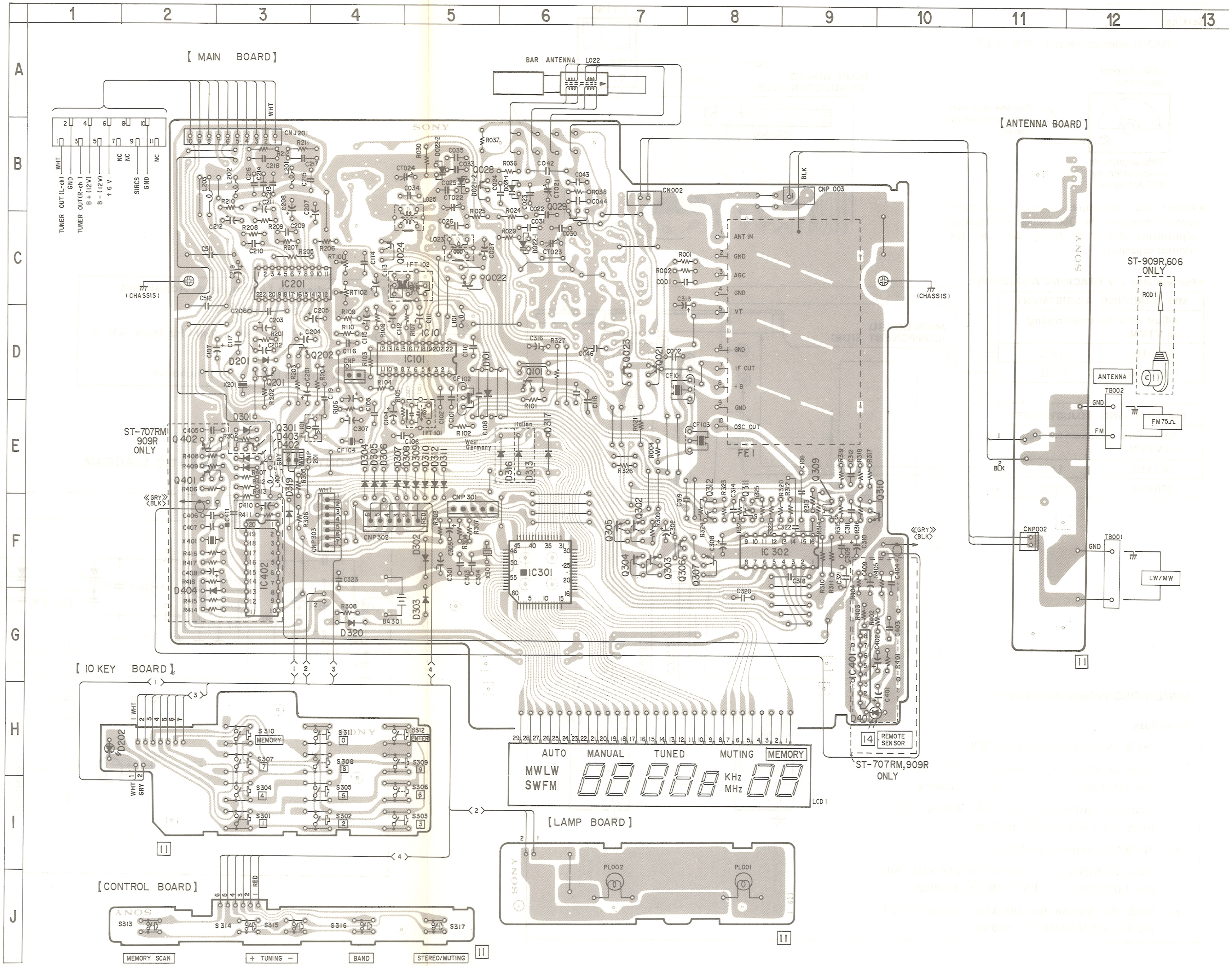
- Color code or sleeving over the end of the jacket.


WHT
RED
(RED)(GRY)

- ○—— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ⌐-┘→ indicates side identified with part number.

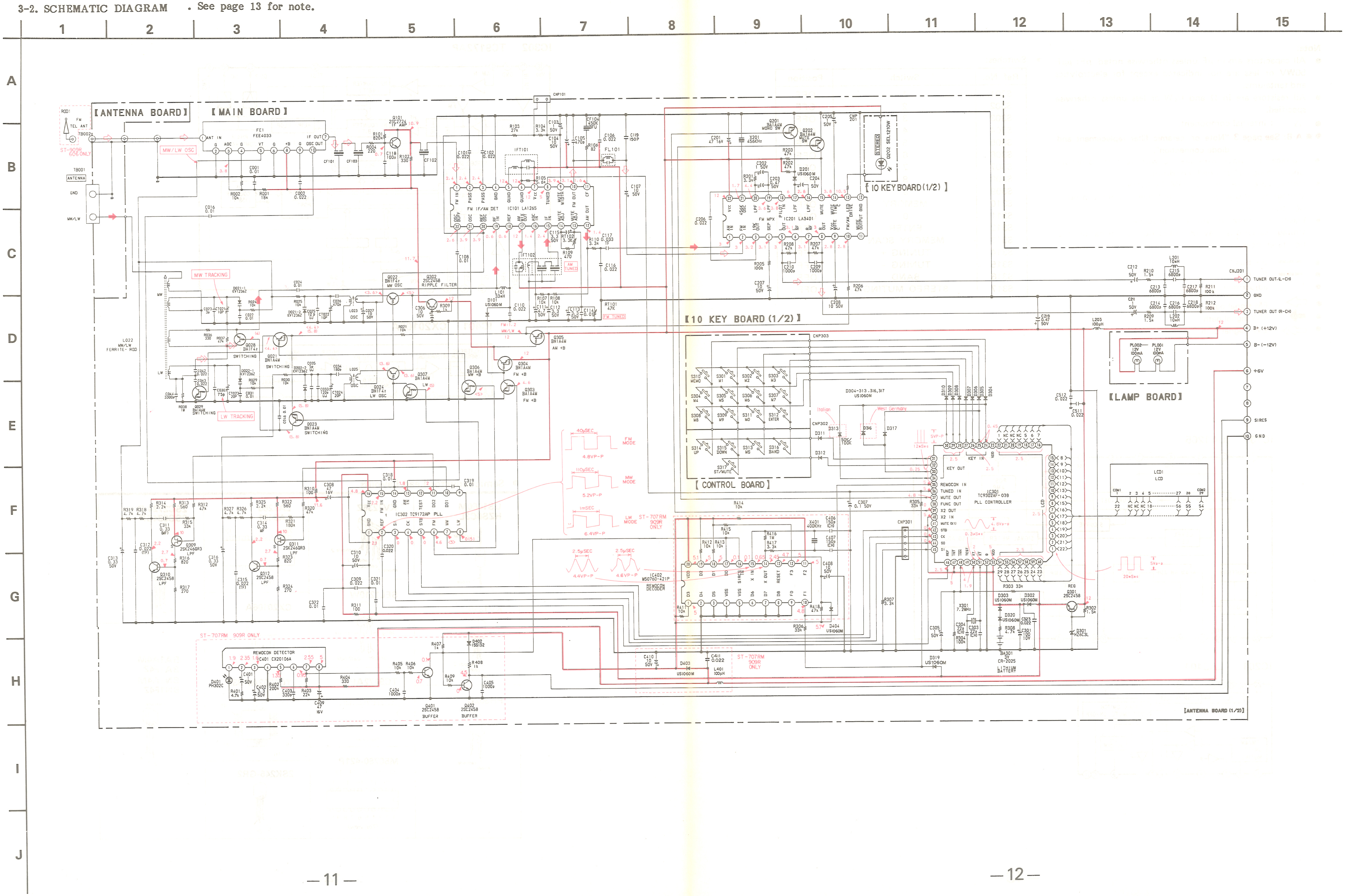
. Semiconductor Location

Ref. No.		Ref. No.	
IC101	D-4	D021-1	B-5
IC201	C-3	D021-2	B-5
IC301	F-6	D022-1	C-6
IC302	F-8	D022-2	B-5
IC401	G-9		
IC402	F-3		
Q021	D-7	D101	D-5
Q022	C-5	D201	D-3
Q023	D-7	D202	H-1
Q024	C-4	D301	E-3
Q028	B-5	D302	F-5
Q029	B-6	D303	F-5
Q101	D-6	D304	E-4
Q201	D-3	D305	E-4
Q202	D-3	D306	E-4
Q301	E-3	D307	E-4
Q302	F-7	D308	E-4
Q303	F-7	D309	E-4
Q304	F-7	D310	E-5
Q305	F-7	D311	E-5
Q306	F-7	D312	E-5
Q307	F-7	D313	E-6
Q309	F-9	D316	E-5
Q310	F-9	D317	E-6
Q311	E-8	D319	F-3
Q312	E-8		
		D320	G-4
Q401	E-2	D401	H-9
Q402	E-2	D402	E-3
		D403	E-3
		D404	F-2


1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H I J
[MAIN BOARD]
TUNER OUT (L-ch)
GND
TUNER OUT (R-ch)
B+ (12V)
B+ (12V)
+6V
NC
NC
SIRCS
GND
NC
WHT
CNJ 201
BAR ANTENNA L022
SONY
CN002
CNP 003
BLK
ANT IN
GND
AGC
GND
VT
GND
IF OUT
+B
GND
OSC OUT
FE1
(CHASSIS)
IC201
IC101
IC301
IC302
IC402
IC401
ST-707RM1 909R ONLY
Italian
West Germany
《GRY》《BLK》
CNP 301
CNP 302
CNP 303
BA301
[ANTENNA BOARD]
ST-909R,606 ONLY
ROD1
ANTENNA
TB002
GND
FM
FM75Ω
TB001
LW/MW
CNP002
REMOTE SENSOR
ST-707RM,909R ONLY
[10 KEY BOARD]
S310 MEMORY
S311 0
S312 ENTER
S307 7
S308 8
S309 9
S304 4
S305 5
S306 6
S301 1
S302 2
S303 3
AUTO MANUAL TUNED MUTING MEMORY
MWLW SWFM
KHz MHz
LCD1
[LAMP BOARD]
PL002
PL001
[CONTROL BOARD]
S313 S314 S315 S316 S317
MEMORY SCAN
+ TUNING −
BAND
STEREO/MUTING

3-2. SCHEMATIC DIAGRAM

• See page 13 for note.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
【ANTENNA BOARD】
【MAIN BOARD】
ROD1
FM TEL ANT
ST-909R 606 ONLY
TB001 ANTENNA
GND
MW/LW
FE1 FEE4033
ANT IN
AGC
VT
+B
IF OUT
OSC OUT
MW/LW OSC
Q101 2SC2724 IF AMP
CF101
CF102
CF103
IC101 LA1265
FM IF/AM DET
FL101
IFT101
IFT102
CNP101
MW TRACKING
LW TRACKING
L022 MW/LW FERRITE- ROD
Q021 BN1A4M SWITCHING
Q022 BN1F4z MW OSC
Q023 BN1A4M SWITCHING
Q024 BN1F4z LW OSC
Q028 BA1F4z SWITCHING
Q029 BA1A4M SWITCHING
Q302 2SC2458 RIPPLE FILTER
Q303 BA1A4M FM +B
Q304 BN1A4M FM +B
Q305 BN1A4M AM +B
Q306 BA1A4M MW +B
Q307 BA1A4M LW
D101 US1060M
AM TUNED
FM TUNED
Q201 BA1A4M MONO SW
Q202 BA1A4M MUTE SW
X201 456KHz
IC201 LA3401
FM MPX
D201 US1060M
D202 SEL1210W
STEREO
【10 KEY BOARD (1/2)】
CNJ201
TUNER OUT-(L-CH)
GND
TUNER OUT (R-CH)
B+ (+12V)
B- (-12V)
+6V
SIRCS
GND
【LAMP BOARD】
PL001 12V 100mA
PL002 12V 100mA
LCD1 LCD
COM1
COM2
CNP303
S310 MEMO
S301 M1
S302 M2
S303 M3
S304 M4
S305 M5
S306 M6
S307 M7
S308 M8
S309 M9
S311 M0
S312 ENTER
S314 UP
S315 DOWN
S313 MS
S316 BAND
S317 ST/MUTE
【CONTROL BOARD】
CNP302
D304-313 .316,317 US1060M
Italian
West Germany
IC301 TC9302AF-039 PLL CONTROLLER
KEY IN
KEY OUT
REMOCON IN
TUNED IN
MUTE OUT
FUNC OUT
X2 OUT
X2 IN
X301 7.2MHz
CNP301
BA301 3V CR-2025 LITHIUM BATTERY
REG Q301 2SC2458
D301 HZ6C3L
IC302 TC9172AP PLL
Q309 2SK246GR3 LPF
Q310 2SC2458 LPF
Q311 2SK246GR3 LPF
Q312 2SC2458 LPF
40μSEC
4.8VP-P
FM MODE
110μSEC
5.2VP-P
MW MODE
1mSEC
6.4VP-P
LW MODE
ST-707RM 909R ONLY
2.5μSEC
4.4VP-P
4.6VP-P
IC402 M50760-421P REMOCON DECODER
ST-707RM 909R ONLY
REMOCON DETECTOR
IC401 CX20106A
D401 PH302C
Q401 2SC2458 BUFFER
Q402 2SC2458 BUFFER
D402 1SS132
D403 US1060M
L401 100μH
X401 400KHz
[ANTENNA BOARD (1/2)]

Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ※ A·B: See page 3 "Note on ceramic filter replacement and diode connection".
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (50 kΩ/V). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.

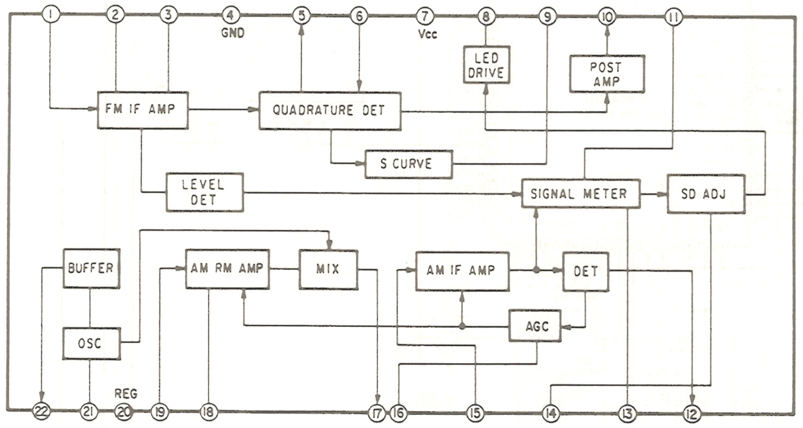
- ▬ : B+ bus.
- - - - : B– bus.
- ☐ : adjustment for repair.

- ⇨ : FM signal path.
- ➡ : MW signal path.
- ⇨⇨ : LW signal path.

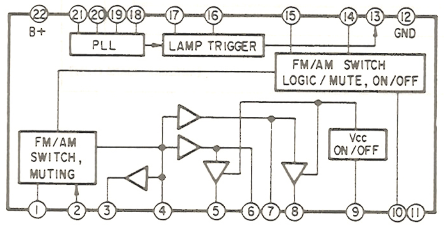
- Switches:

Ref. No.	Switch	Position
S301	1	OFF
S302	2	OFF
S303	3	OFF
S304	4	OFF
S305	5	OFF
S306	6	OFF
S307	7	OFF
S308	8	OFF
S309	9	OFF
S310	MEMORY	OFF
S311	0	OFF
S312	ENTER	OFF
S313	MEMORY SCAN	OFF
S314	TUNING +	OFF
S315	TUNING –	OFF
S316	BAND	OFF
S317	STEREO MUTING	OFF

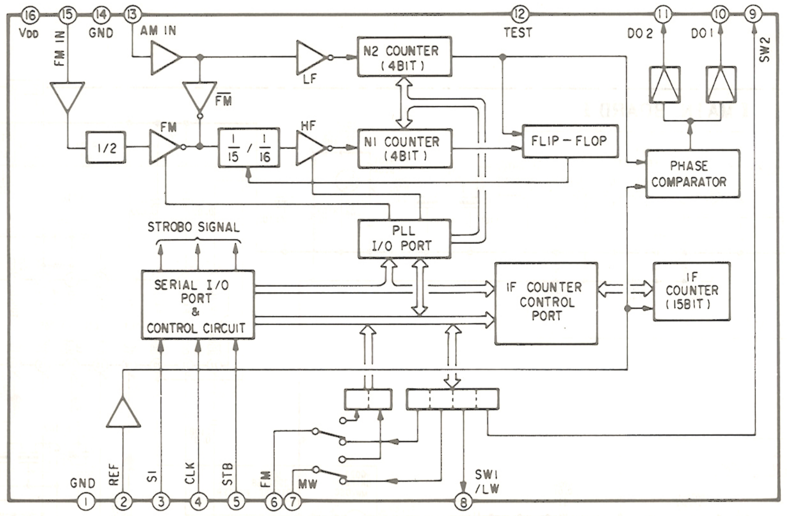
IC101 LA1265


①
②
③
④ GND
⑤
⑥
⑦ Vcc
⑧
⑨
⑩
⑪
LED DRIVE
POST AMP
FM IF AMP
QUADRATURE DET
S CURVE
LEVEL DET
SIGNAL METER
SD ADJ
BUFFER
AM RM AMP
MIX
AM IF AMP
DET
AGC
OSC
REG
㉒
㉑
⑳
⑲
⑱
⑰
⑯
⑮
⑭
⑬
⑫

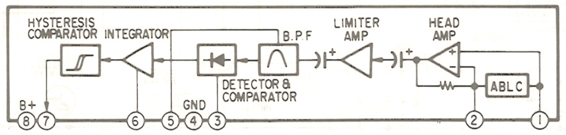
IC201 LA3401


㉒ B+
㉑
⑳
⑲
⑱
⑰
⑯
⑮
⑭
⑬
⑫ GND
PLL
LAMP TRIGGER
FM/AM SWITCH LOGIC / MUTE, ON/OFF
FM/AM SWITCH, MUTING
Vcc ON/OFF
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪

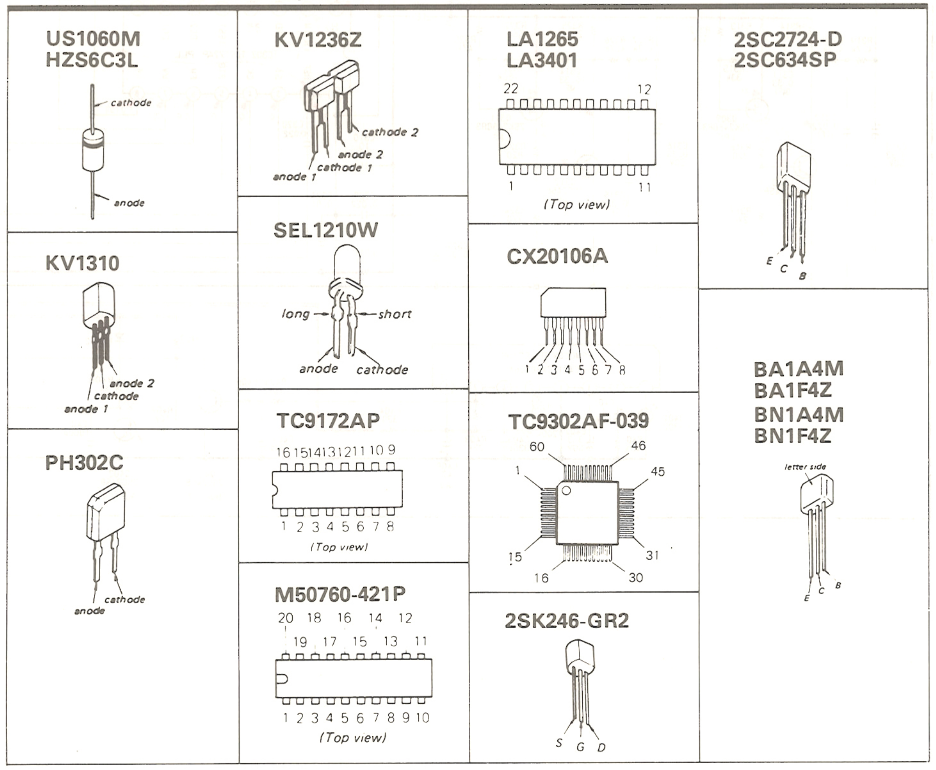
IC302 TC9172AP


⑯ VDD
⑮ FM IN
⑭ GND
⑬ AM IN
⑫ TEST
⑪ DO 2
⑩ DO 1
⑨ SW2
LF
FM
HF
N2 COUNTER (4BIT)
N1 COUNTER (4BIT)
1/2
1/15 / 1/16
FLIP – FLOP
PHASE COMPARATOR
STROBO SIGNAL
PLL I/O PORT
SERIAL I/O PORT & CONTROL CIRCUIT
IF COUNTER CONTROL PORT
IF COUNTER (15BIT)
① GND
② REF
③ SI
④ CLK
⑤ STB
⑥ FM
⑦ MW
⑧ SW1 /LW

IC401 CX20106A


HYSTERESIS COMPARATOR
INTEGRATOR
B.P.F
LIMITER AMP
HEAD AMP
DETECTOR & COMPARATOR
ABLC
B+
GND
⑧
⑦
⑥
⑤
④
③
②
①

- **Semiconductor Lead Layouts**

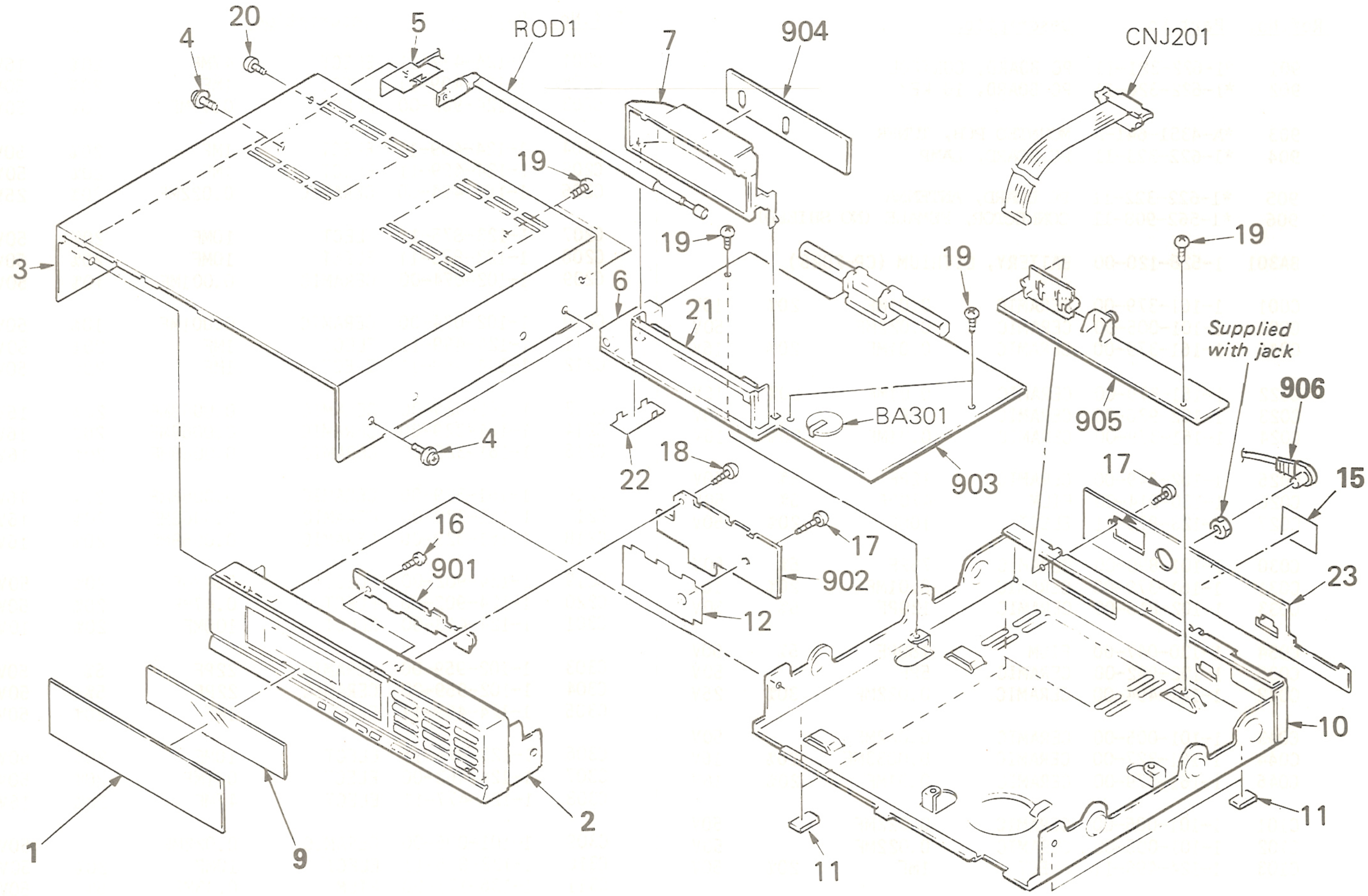

US1060M
HZS6C3L
cathode
anode
KV1236Z
cathode 2
anode 2
cathode 1
anode 1
LA1265
LA3401
22
12
1
11
(Top view)
2SC2724-D
2SC634SP
E
C
B
KV1310
anode 2
cathode
anode 1
SEL1210W
long
short
anode
cathode
CX20106A
1 2 3 4 5 6 7 8
BA1A4M
BA1F4Z
BN1A4M
BN1F4Z
letter side
E
C
B
PH302C
cathode
anode
TC9172AP
16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)
TC9302AF-039
60
46
1
45
15
31
16
30
M50760-421P
20 18 16 14 12
19 17 15 13 11
1 2 3 4 5 6 7 8 9 10
(Top view)
2SK246-GR2
S
G
D

SECTION 4
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color ↑ Parts Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.



No.	Part No.	Description
1	4-919-610-51	PLATE, ORNAMENTAL
2	X-4919-663-1	PANEL ASSY, FRONT
3	4-920-137-01	CASE
4	3-704-366-01	SCREW (CASE) (M3X8)
5	*4-919-611-01	BRACKET, ANT
6	*4-909-705-01	PLATE, SHIELD
7	*4-917-275-01	HOUSE, LAMP
8	------------	
9	4-919-609-31	PLATE, INDICATION
10	*4-919-617-11	CHASSIS
11	4-919-608-01	FOOT
12	*4-919-607-01	SPACER
13	------------	
14	------------	
15	*4-922-713-01	(West Germany)...LABEL, MODEL NUMBER
16	7-685-133-19	SCREW +P 2.6X6 TYPE2 SLIT
17	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S

No.	Part No.	Description
18	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
19	7-682-147-01	SCREW +BVTT 3X6 (S)
20	7-682-547-09	SCREW +B 3X6
21	*4-909-633-01	ILLUMINATOR
22	*4-920-149-01	PLATE (A), SHIELD
23	*4-919-606-11	COVER, REAR
901	*1-622-321-11	PC BOARD, CONTROL
902	*1-622-320-11	PC BOARD, 10 KEY
903	*A-4351-641-A	MOUNTED PCB, TUNER
904	*1-622-323-11	PC BOARD, LAMP
905	*1-622-322-11	PC BOARD, ANTENNA
906	*1-562-908-11	CONNECTOR, FEMALE (NO SHIELD)
BA301	1-528-120-00	BATTERY, LITHIUM (CR-2025)
CNJ201	1-559-816-11	CORD (WITH CONNECTOR)
ROD1	1-501-270-00	ANTENNA, TELESCOPIC

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description			
901	*1-622-321-11	PC BOARD, CONTROL			
902	*1-622-320-11	PC BOARD, 10 KEY			
903	*A-4351-641-A	MOUNTED PCB, TUNER			
904	*1-622-323-11	PC BOARD, LAMP			
905	*1-622-322-11	PC BOARD, ANTENNA			
906	*1-562-908-11	CONNECTOR, FEMALE (NO SHIELD)			
BA301	1-528-120-00	BATTERY, LITHIUM (CR-2025)			
C001	1-161-379-00	CERAMIC	0.01MF	20%	16V
C002	1-101-005-00	CERAMIC	0.022MF		50V
C016	1-161-379-00	CERAMIC	0.01MF	20%	16V
C022	1-161-379-00	CERAMIC	0.01MF	20%	16V
C023	1-102-936-00	CERAMIC	3PF		50V
C024	1-161-379-00	CERAMIC	0.01MF	20%	16V
C025	1-102-949-00	CERAMIC	12PF	5%	50V
C026	1-130-014-00	FILM	470PF	5%	50V
C027	1-123-875-11	ELECT	10MF	20%	50V
C030	1-101-890-00	CERAMIC	75PF	5%	50V
C031	1-161-379-00	CERAMIC	0.01MF	20%	16V
C033	1-102-816-00	CERAMIC	120PF	5%	50V
C034	1-130-047-00	FILM	180PF	5%	50V
C035	1-102-942-00	CERAMIC	5PF		50V
C042	1-161-494-00	CERAMIC	0.022MF	30%	25V
C043	1-101-005-00	CERAMIC	0.022MF		50V
C044	1-161-327-00	CERAMIC	0.0033MF	20%	16V
C046	1-161-379-00	CERAMIC	0.01MF	20%	16V
C101	1-101-005-00	CERAMIC	0.022MF		50V
C102	1-101-005-00	CERAMIC	0.022MF		50V
C103	1-124-499-11	ELECT	1MF	20%	50V
C104	1-123-875-11	ELECT	10MF	20%	50V
C105	1-162-290-31	CERAMIC	470PF	10%	50V
C106	1-101-005-00	CERAMIC	0.022MF		50V
C107	1-123-875-11	ELECT	10MF	20%	50V
C108	1-161-379-00	CERAMIC	0.01MF	20%	16V
C110	1-101-005-00	CERAMIC	0.022MF		50V
C111	1-124-927-11	ELECT	4.7MF	20%	50V
C112	1-123-382-00	ELECT	3.3MF	20%	50V
C113	1-123-382-00	ELECT	3.3MF	20%	50V
C114	1-161-379-00	CERAMIC	0.01MF	20%	16V
C115	1-123-382-00	ELECT	3.3MF	20%	50V
C116	1-101-005-00	CERAMIC	0.022MF		50V
C117	1-130-489-00	MYLAR	0.033MF	5%	50V
C118	1-162-282-31	CERAMIC	100PF	10%	50V
C119	1-162-284-31	CERAMIC	150PF	10%	50V
C201	1-124-477-11	ELECT	47MF	20%	16V
C202	1-124-499-11	ELECT	1MF	20%	50V
C203	1-124-902-00	ELECT	0.47MF	20%	50V
C204	1-124-499-11	ELECT	1MF	20%	50V
C205	1-124-499-11	ELECT	1MF	20%	50V
C206	1-161-494-00	CERAMIC	0.022MF	30%	25V
C207	1-123-875-11	ELECT	10MF	20%	50V
C208	1-123-875-11	ELECT	10MF	20%	50V
C209	1-102-074-00	CERAMIC	0.001MF	10%	50V
C210	1-102-074-00	CERAMIC	0.001MF	10%	50V
C211	1-124-499-11	ELECT	1MF	20%	50V
C212	1-124-499-11	ELECT	1MF	20%	50V
C213	1-161-329-00	CERAMIC	0.0068MF	20%	16V
C214	1-161-329-00	CERAMIC	0.0068MF	20%	16V
C215	1-161-329-00	CERAMIC	0.0068MF	20%	16V
C216	1-161-329-00	CERAMIC	0.0068MF	20%	16V
C217	1-161-329-00	CERAMIC	0.0068MF	20%	16V
C218	1-161-329-00	CERAMIC	0.0068MF	20%	16V
C219	1-124-902-00	ELECT	0.47MF	20%	50V
C220	1-124-902-00	ELECT	0.47MF	20%	50V
C301	1-124-443-00	ELECT	100MF	20%	10V
C303	1-102-959-00	CERAMIC	22PF	5%	50V
C304	1-102-959-00	CERAMIC	22PF	5%	50V
C305	1-124-499-11	ELECT	1MF	20%	50V
C306	1-123-875-11	ELECT	10MF	20%	50V
C307	1-124-463-00	ELECT	0.1MF	20%	50V
C308	1-124-477-11	ELECT	47MF	20%	16V
C309	1-101-005-00	CERAMIC	0.022MF		50V
C310	1-123-875-11	ELECT	10MF	20%	50V
C311	1-136-171-00	FILM	0.33MF	5%	50V
C312	1-130-487-00	MYLAR	0.022MF	5%	50V
C313	1-124-252-00	ELECT	0.33MF	20%	50V
C314	1-136-171-00	FILM	0.33MF	5%	50V
C315	1-130-487-00	MYLAR	0.022MF	5%	50V
C316	1-124-252-00	ELECT	0.33MF	20%	50V
C318	1-161-379-00	CERAMIC	0.01MF	20%	16V
C319	1-161-379-00	CERAMIC	0.01MF	20%	16V
C320	1-130-487-00	MYLAR	0.022MF	5%	50V
C321	1-161-379-00	CERAMIC	0.01MF	20%	16V
C322	1-161-379-00	CERAMIC	0.01MF	20%	16V
C323	1-101-005-00	CERAMIC	0.022MF		50V
C401	1-124-499-11	ELECT	1MF	20%	50V
C402	1-123-382-00	ELECT	3.3MF	20%	50V
C403	1-162-288-31	CERAMIC	330PF	10%	50V
C404	1-162-294-31	CERAMIC	0.001MF	10%	50V

Ref.No.	Part No.	Description			
C405	1-162-294-31	CERAMIC	0.001MF	10%	50V
C406	1-101-361-00	CERAMIC	150PF	5%	50V
C407	1-101-361-00	CERAMIC	150PF	5%	50V
C408	1-123-875-11	ELECT	10MF	20%	50V
C409	1-124-477-11	ELECT	47MF	20%	16V
C410	1-123-875-11	ELECT	10MF	20%	50V
C411	1-161-494-00	CERAMIC	0.022MF	30%	25V
C511	1-161-494-00	CERAMIC	0.022MF	30%	25V
C512	1-161-494-00	CERAMIC	0.022MF	30%	25V
CF101	1-567-389-11	FILTER, CERAMIC			
CF102	1-567-389-11	FILTER, CERAMIC			
CF103	1-567-389-11	FILTER, CERAMIC			
CF104	1-527-981-00	FILTER, CERAMIC			
CNJ201	1-559-816-11	CORD (WITH CONNECTOR)			
CNP002	*1-564-336-00	PIN, CONNECTOR 2P			
CNP003	*1-535-115-00	TERMINAL			
CNP101	*1-560-060-00	PIN, CONNECTOR 2P			
CNP201	*1-564-336-00	PIN, CONNECTOR 2P			
CNP301	*1-560-063-00	PIN, CONNECTOR 5P			
CNP302	*1-560-064-00	PIN, CONNECTOR 6P			
CNP303	*1-564-341-11	PIN, CONNECTOR 7P			
CT021	1-141-227-00	CAP, CERAMIC TRIMMER			
CT022	1-141-227-00	CAP, CERAMIC TRIMMER			
CT023	1-141-227-00	CAP, CERAMIC TRIMMER			
CT024	1-141-227-00	CAP, CERAMIC TRIMMER			
D021	8-719-923-64	DIODE KV1236Z			
D022	8-719-923-64	DIODE KV1236Z			
D101	8-719-000-26	DIODE US1060M			
D201	8-719-000-26	DIODE US1060M			
D202	8-719-303-13	DIODE SEL1210W			
D301	8-719-933-41	DIODE HZS6C3L			
D302	8-719-000-26	DIODE US1060M			
D303	8-719-000-26	DIODE US1060M			
D304	8-719-000-26	DIODE US1060M			
D305	8-719-000-26	DIODE US1060M			
D306	8-719-000-26	DIODE US1060M			
D307	8-719-000-26	DIODE US1060M			
D308	8-719-000-26	DIODE US1060M			
D309	8-719-000-26	DIODE US1060M			
D310	8-719-000-26	DIODE US1060M			
D311	8-719-000-26	DIODE US1060M			
D312	8-719-000-26	DIODE US1060M			
D316	8-719-000-26	DIODE US1060M			
D317	8-719-000-26	DIODE US1060M			
D319	8-719-000-26	DIODE US1060M			
D320	8-719-000-26	DIODE US1060M			
D401	8-719-123-68	PH302C			
D402	8-719-000-26	DIODE US1060M			
D403	8-719-000-26	DIODE US1060M			
D404	8-719-000-26	DIODE US1060M			
FE1	1-463-857-11	FRONT END (FM)			
FL101	1-235-126-00	ENCAPSULATED COMPONENT			
IC101	8-759-801-81	IC LA1265			
IC201	8-759-801-80	IC LA3401			
IC301	8-759-230-50	IC TC9302AF-039			

Ref.No.	Part No.	Description			
IC302	8-759-230-16	IC TC9172AP			
IC401	8-759-602-54	IC CX20106A			
IC402	8-759-603-43	IC M50760-421P			
IFT101	1-404-659-11	COIL, DISCRIMINATOR			
IFT102	1-404-713-11	TRANSFORMER, IF			
L022	1-402-151-11	ANTENNA, FERRITE-ROD (LW/MW)			
L023	1-406-089-11	COIL (OSC)			
L025	1-406-207-11	COIL, LW (OSC)			
L101	1-408-930-00	INDUCTOR	33MMH		
L201	1-408-924-00	INDUCTOR	10MMH		
L202	1-408-924-00	INDUCTOR	10MMH		
L203	1-410-601-21	INDUCTOR	100UH		
L401	1-410-601-21	INDUCTOR	100UH		
LCD1	1-807-453-41	DISPLAY PANEL, LIQUID CRYSTAL			
PL001	1-518-527-51	LAMP, PILOT			
PL002	1-518-527-51	LAMP, PILOT			
Q021	8-729-115-15	TRANSISTOR BN1A4M			
Q022	8-729-115-33	TRANSISTOR BN1F4Z			
Q023	8-729-115-15	TRANSISTOR BN1A4M			
Q024	8-729-115-33	TRANSISTOR BN1F4Z			
Q028	8-729-115-93	TRANSISTOR BA1F4Z			
Q029	8-729-115-79	TRANSISTOR BA1A4M			
Q101	8-729-672-43	TRANSISTOR 2SC2724-D			
Q201	8-729-115-79	TRANSISTOR BA1A4M			
Q202	8-729-115-79	TRANSISTOR BA1A4M			
Q301	8-729-600-27	TRANSISTOR 2SC634SP			
Q302	8-729-600-27	TRANSISTOR 2SC634SP			
Q303	8-729-115-79	TRANSISTOR BA1A4M			
Q304	8-729-115-15	TRANSISTOR BN1A4M			
Q305	8-729-115-15	TRANSISTOR BN1A4M			
Q306	8-729-115-79	TRANSISTOR BA1A4M			
Q307	8-729-115-79	TRANSISTOR BA1A4M			
Q309	8-729-201-56	TRANSISTOR 2SK246GR2			
Q310	8-729-600-27	TRANSISTOR 2SC634SP			
Q311	8-729-201-56	TRANSISTOR 2SK246GR2			
Q312	8-729-600-27	TRANSISTOR 2SC634SP			
Q401	8-729-600-27	TRANSISTOR 2SC634SP			
Q402	8-729-600-27	TRANSISTOR 2SC634SP			
R001	1-249-432-11	CARBON	18K	5%	1/4W
R002	1-249-429-11	CARBON	10K	5%	1/4W
R004	1-249-409-11	CARBON	220	5%	1/4W
R021	1-249-429-11	CARBON	10K	5%	1/4W
R024	1-249-429-11	CARBON	10K	5%	1/4W
R025	1-249-429-11	CARBON	10K	5%	1/4W
R029	1-249-429-11	CARBON	10K	5%	1/4W
R030	1-249-429-11	CARBON	10K	5%	1/4W
R036	1-249-411-11	CARBON	330	5%	1/4W
R037	1-249-437-11	CARBON	47K	5%	1/4W
R038	1-247-903-00	CARBON	1M	5%	1/4W
R101	1-247-901-11	CARBON	820K	5%	1/4W
R102	1-249-411-11	CARBON	330	5%	1/4W
R103	1-249-434-11	CARBON	27K	5%	1/4W
R104	1-249-423-11	CARBON	3.3K	5%	1/4W
R105	1-249-426-11	CARBON	5.6K	5%	1/4W
R106	1-249-404-00	CARBON	82	5%	1/4W
R107	1-249-429-11	CARBON	10K	5%	1/4W

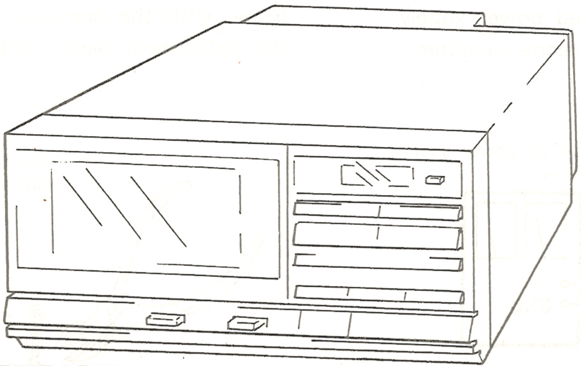
Ref.No.	Part No.	Description			
R108	1-249-429-11	CARBON	10K	5%	1/4W
R109	1-249-413-11	CARBON	470	5%	1/4W
R110	1-249-423-11	CARBON	3.3K	5%	1/4W
R201	1-249-423-11	CARBON	3.3K	5%	1/4W
R202	1-249-437-11	CARBON	47K	5%	1/4W
R203	1-249-437-11	CARBON	47K	5%	1/4W
R204	1-249-417-11	CARBON	1K	5%	1/4W
R205	1-249-441-11	CARBON	100K	5%	1/4W
R206	1-249-437-11	CARBON	47K	5%	1/4W
R207	1-249-437-11	CARBON	47K	5%	1/4W
R208	1-249-437-11	CARBON	47K	5%	1/4W
R209	1-249-419-11	CARBON	1.5K	5%	1/4W
R210	1-249-419-11	CARBON	1.5K	5%	1/4W
R211	1-249-441-11	CARBON	100K	5%	1/4W
R212	1-249-441-11	CARBON	100K	5%	1/4W
R302	1-249-419-11	CARBON	1.5K	5%	1/4W
R303	1-249-435-11	CARBON	33K	5%	1/4W
R304	1-249-441-11	CARBON	100K	5%	1/4W
R305	1-249-435-11	CARBON	33K	5%	1/4W
R306	1-249-435-11	CARBON	33K	5%	1/4W
R307	1-249-423-11	CARBON	3.3K	5%	1/4W
R308	1-249-425-11	CARBON	4.7K	5%	1/4W
R309	1-249-417-11	CARBON	1K	5%	1/4W
R310	1-249-405-11	CARBON	100	5%	1/4W
R311	1-249-405-11	CARBON	100	5%	1/4W
R312	1-249-437-11	CARBON	47K	5%	1/4W
R313	1-249-414-11	CARBON	560	5%	1/4W
R314	1-249-421-11	CARBON	2.2K	5%	1/4W
R315	1-249-435-11	CARBON	33K	5%	1/4W
R316	1-249-416-11	CARBON	820	5%	1/4W
R317	1-249-410-11	CARBON	270	5%	1/4W
R318	1-249-425-11	CARBON	4.7K	5%	1/4W
R319	1-249-425-11	CARBON	4.7K	5%	1/4W
R320	1-249-437-11	CARBON	47K	5%	1/4W
R321	1-247-885-00	CARBON	180K	5%	1/4W
R322	1-249-414-11	CARBON	560	5%	1/4W
R323	1-249-416-11	CARBON	820	5%	1/4W
R324	1-249-410-11	CARBON	270	5%	1/4W
R325	1-249-421-11	CARBON	2.2K	5%	1/4W
R326	1-249-425-11	CARBON	4.7K	5%	1/4W
R327	1-249-425-11	CARBON	4.7K	5%	1/4W
R401	1-249-389-11	CARBON	4.7	5%	1/4W
R402	1-247-886-11	CARBON	200K	5%	1/4W
R403	1-249-433-11	CARBON	22K	5%	1/4W
R404	1-249-411-11	CARBON	330	5%	1/4W

Ref.No.	Part No.	Description			
R405	1-249-429-11	CARBON	10K	5%	1/4W
R406	1-249-429-11	CARBON	10K	5%	1/4W
R407	1-249-417-11	CARBON	1K	5%	1/4W
R408	1-249-417-11	CARBON	1K	5%	1/4W
R409	1-249-429-11	CARBON	10K	5%	1/4W
R411	1-249-429-11	CARBON	10K	5%	1/4W
R412	1-249-429-11	CARBON	10K	5%	1/4W
R413	1-249-429-11	CARBON	10K	5%	1/4W
R414	1-249-429-11	CARBON	10K	5%	1/4W
R415	1-249-429-11	CARBON	10K	5%	1/4W
R416	1-247-903-00	CARBON	1M	5%	1/4W
R417	1-249-423-11	CARBON	3.3K	5%	1/4W
R418	1-249-437-11	CARBON	47K	5%	1/4W
ROD1	1-501-270-00	ANTENNA, TELESCOPIC			
RT101	1-228-996-00	RES, ADJ, CARBON 47K			
RT102	1-228-992-11	RES, ADJ, CARBON 3.3K			
S301	1-554-303-21	SWITCH, KEY BOARD			
S302	1-554-303-21	SWITCH, KEY BOARD			
S303	1-554-303-21	SWITCH, KEY BOARD			
S304	1-554-303-21	SWITCH, KEY BOARD			
S305	1-554-303-21	SWITCH, KEY BOARD			
S306	1-554-303-21	SWITCH, KEY BOARD			
S307	1-554-303-21	SWITCH, KEY BOARD			
S308	1-554-303-21	SWITCH, KEY BOARD			
S309	1-554-303-21	SWITCH, KEY BOARD			
S310	1-554-303-21	SWITCH, KEY BOARD			
S311	1-554-303-21	SWITCH, KEY BOARD			
S312	1-554-303-21	SWITCH, KEY BOARD			
S313	1-570-876-11	SWITCH, KEY BOARD			
S314	1-570-876-11	SWITCH, KEY BOARD			
S315	1-570-876-11	SWITCH, KEY BOARD			
S316	1-570-876-11	SWITCH, KEY BOARD			
S317	1-570-876-11	SWITCH, KEY BOARD			
TB001	1-536-707-00	TERMINAL BOARD, PUSH 2P			
TB002	1-563-199-11	CONNECTOR, PAL			
X201	1-567-250-11	OSCILLATOR, CERAMIC			
X301	1-567-736-11	VIBRATOR, CRYSTAL			
X401	1-527-532-00	OSCILLATOR, CERAMIC			

TC-R707/R707M

SERVICE MANUAL

US Model
AEP Model
TC-R707M
UK Model
E Model
West German Model
TC-R707



- TC-R707 is the STEREO CASSETTE DECK in FH-707R/909CD/909R.
- TC-R707M is the STEREO CASSETTE DECK in MHC-2000.

SPECIFICATIONS

Recording system	4-track 2-channel stereo
Frequency response	DOLBY NR OFF (DIN) With TYPE Ⅳ cassette (Sony METAL-ES) 40 to 15,000 Hz (±3 dB) With TYPE Ⅱ cassette (Sony UX-S) 40 to 14,000 Hz (±3 dB) With TYPE Ⅰ cassette (Sony HF-X) 40 to 13,000 Hz (±3 dB)
Wow and flutter	0.1% WRMS (NAB) ±0.2% (DIN)

General

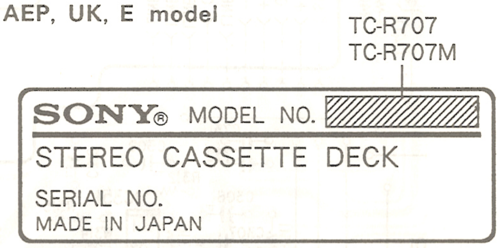
Dimensions	TC-R707 Approx. 220 × 120 × 270 mm (w/h/d) (8¾ × 4¾ × 10¾ inches) TC-R707M Approx. 245 × 120 × 270 mm (w/h/d) (9¾ × 4¾ × 10¾ inches)
Weight	Approx. 2.5 kg (5 lb 9 oz) net

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ⅅ are trademarks of Dolby Laboratories Licensing Corporation.

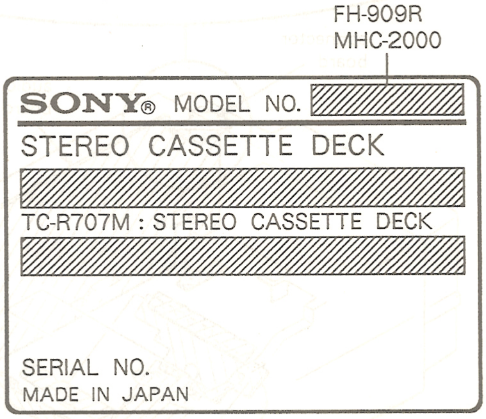
Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	TCM-170RB8

MODEL IDENTIFICATION

US, AEP, UK, E model


TC-R707
TC-R707M
SONY® MODEL NO.
STEREO CASSETTE DECK
SERIAL NO.
MADE IN JAPAN

West Germany model


FH-909R
MHC-2000
SONY® MODEL NO.
STEREO CASSETTE DECK
TC-R707M : STEREO CASSETTE DECK
SERIAL NO.
MADE IN JAPAN

MICROFILM

STEREO CASSETTE DECK

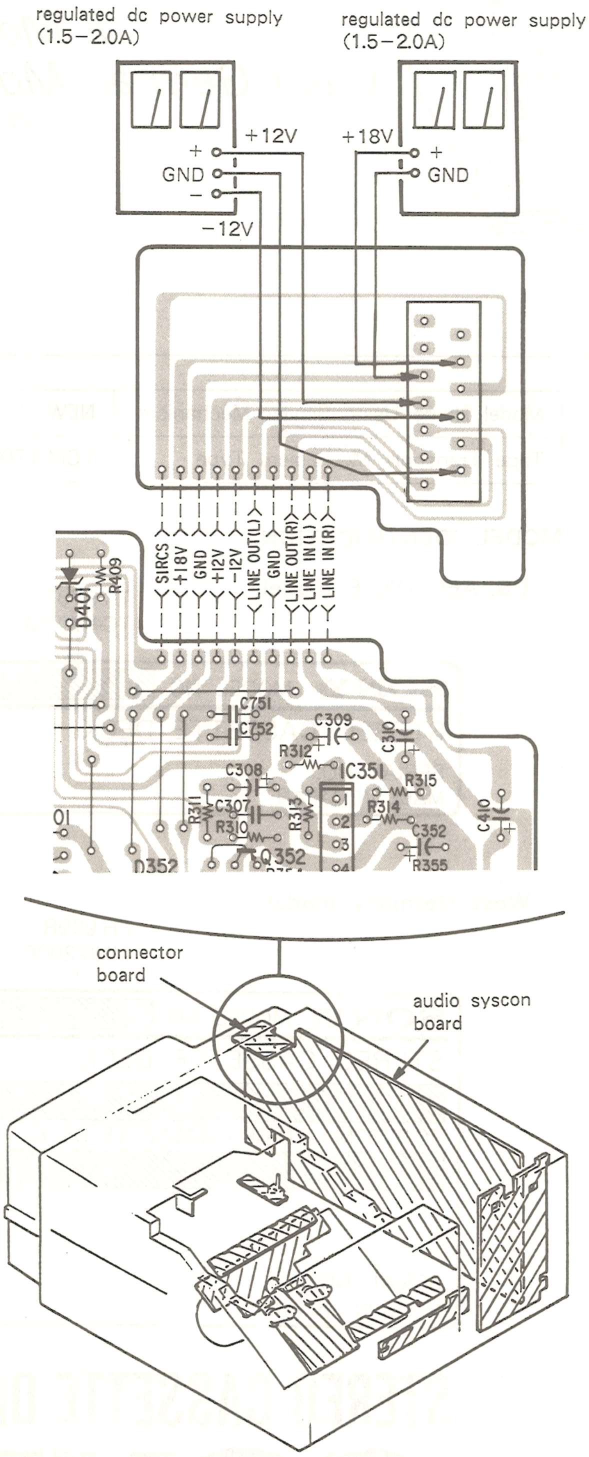
SONY®

SERVICING NOTE

REPAIRING PRECAUTION

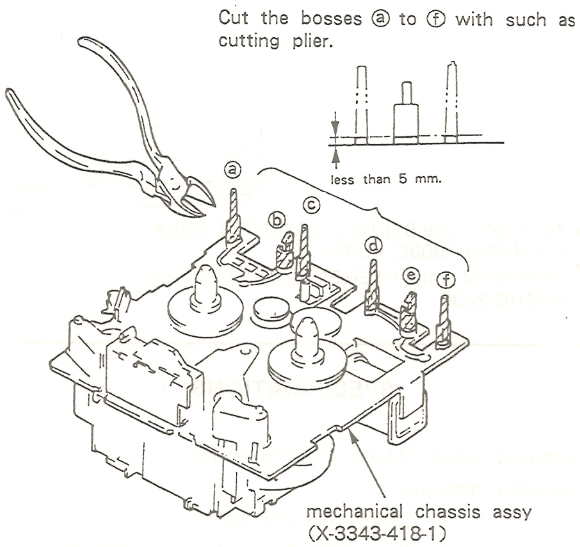
[To apply B+ voltage]

The power of this unit is fed from amplifier. Because of this, connect the regulated power supply as illustrated below when this unit alone operates.


regulated dc power supply
(1.5−2.0A)
regulated dc power supply
(1.5−2.0A)
+12V
+
GND
−
−12V
+18V
+
GND
SIRCS
+18V
GND
+12V
−12V
LINE OUT(L)
GND
LINE OUT(R)
LINE IN(L)
LINE IN(R)
D401
R409
C751
C752
C309
C310
R312
IC351
C308
R315
C307
R311
R313
R314
R310
C352
C410
Q352
R355
D352
connector board
audio syscon board

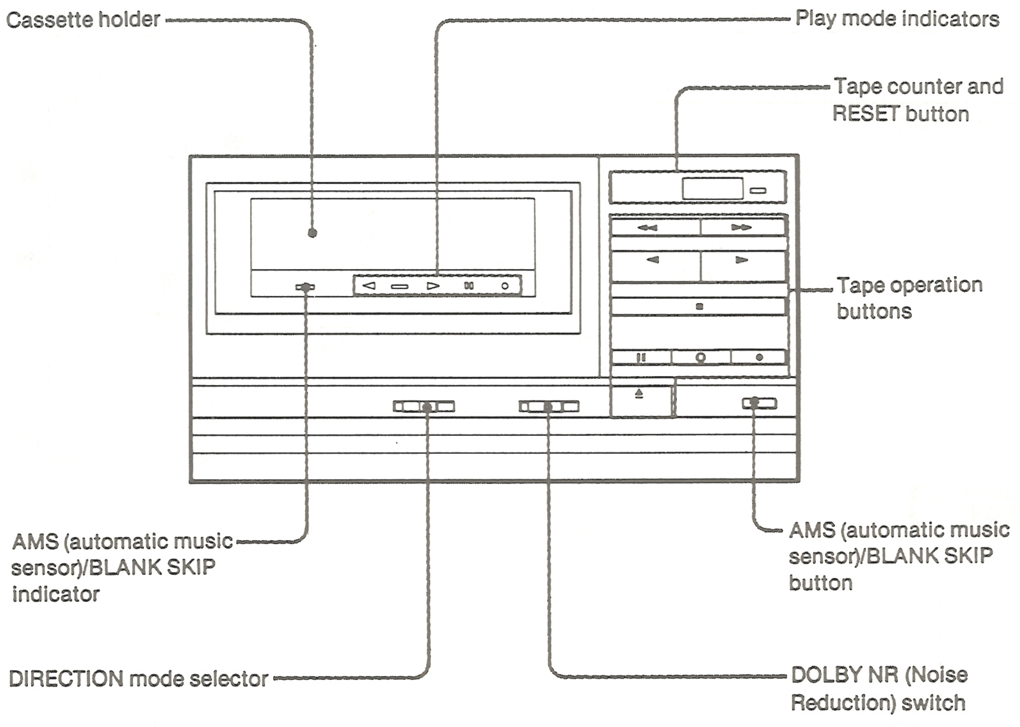
NOTE ON REPLACEMENT OF MECHANISM CHASSIS ASSEMBLY

The mechanism chassis assembly is supplied as shown below with the bosses ⓐ to ⓕ on service.
On replacement please finish as shown in the figure.


Cut the bosses ⓐ to ⓕ with such as cutting plier.
less than 5 mm.
ⓐ
ⓑ
ⓒ
ⓓ
ⓔ
ⓕ
mechanical chassis assy
(X-3343-418-1)

SECTION 1
GENERAL

1-1. LOCATION OF CONTROLS

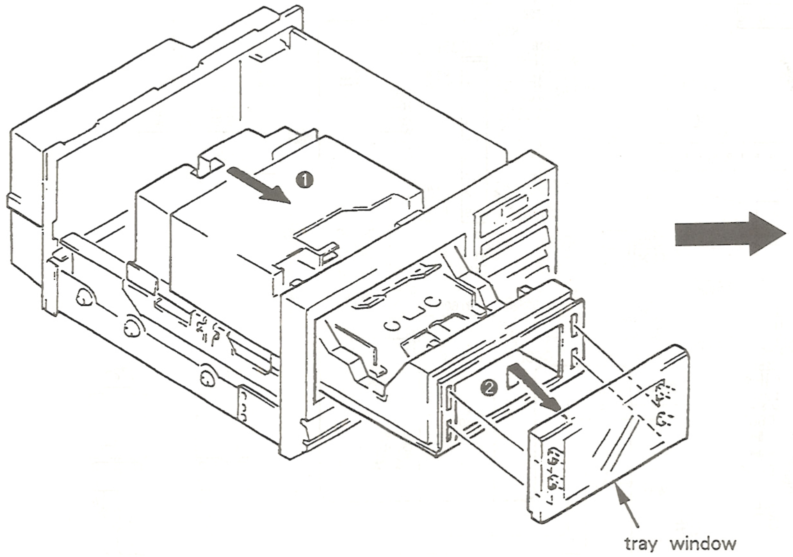

Cassette holder
Play mode indicators
Tape counter and RESET button
Tape operation buttons
AMS (automatic music sensor)/BLANK SKIP indicator
AMS (automatic music sensor)/BLANK SKIP button
DIRECTION mode selector
DOLBY NR (Noise Reduction) switch

SECTION 2
DISASSEMBLY

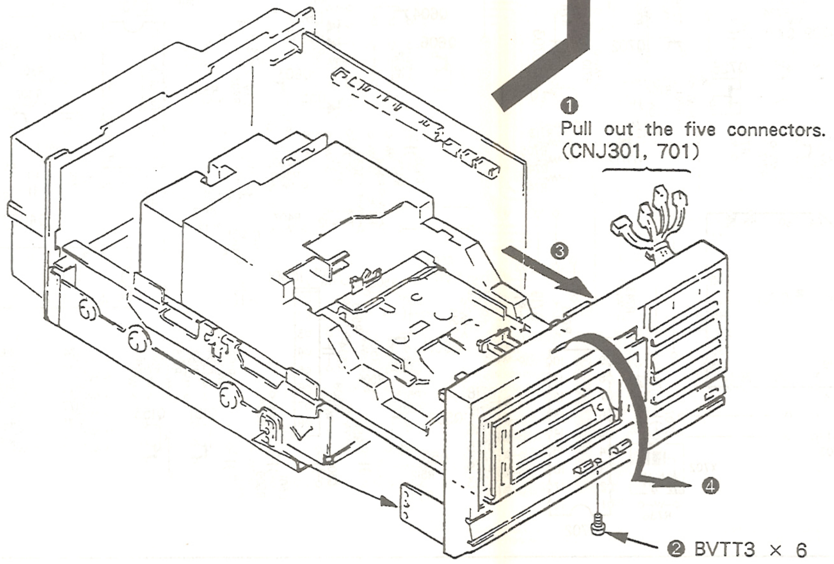
Note : Follow the disassembly procedure in the numerical order given.

2-1. REMOVAL

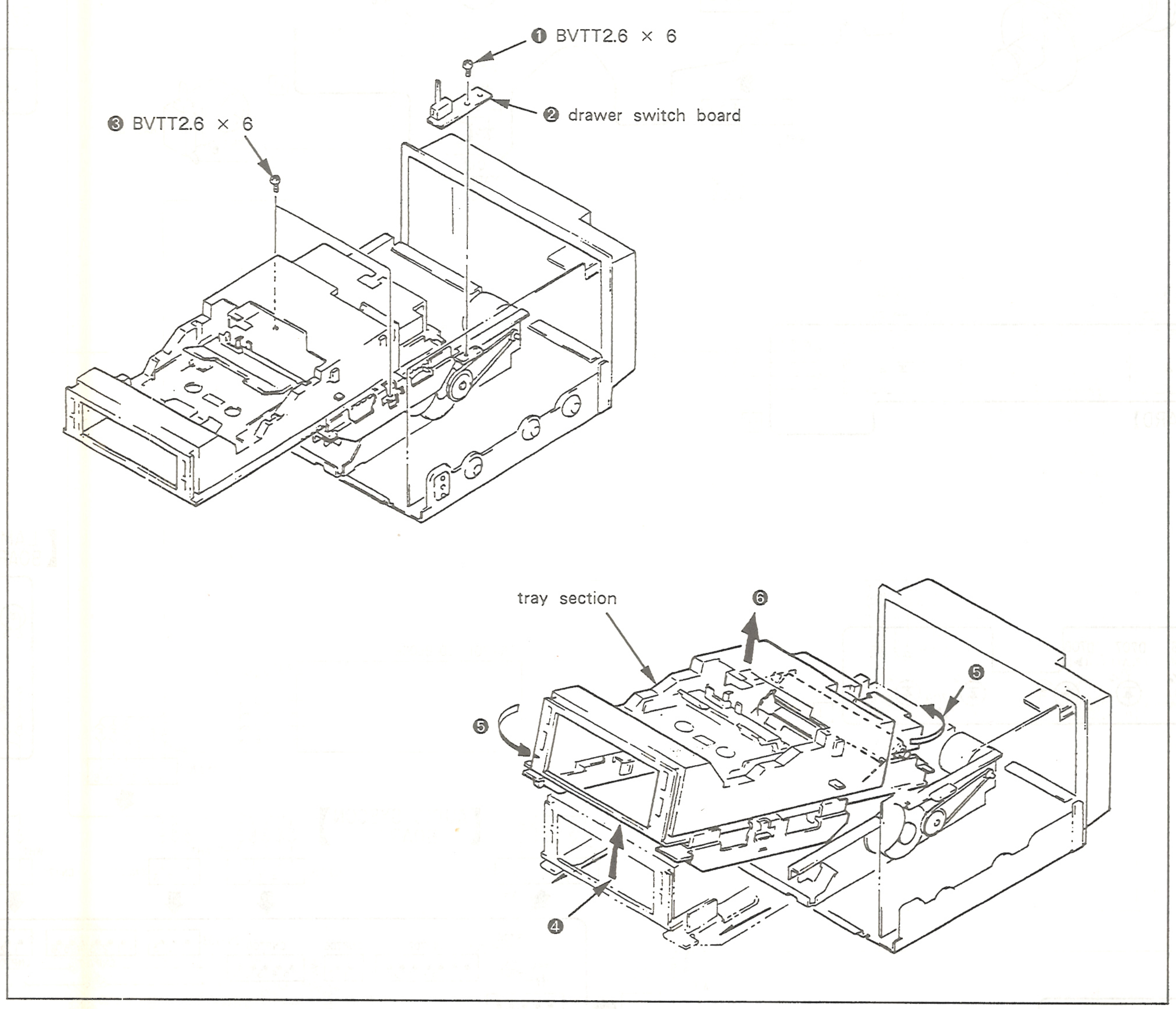
TRAY WINDOW


❶
❷
tray window

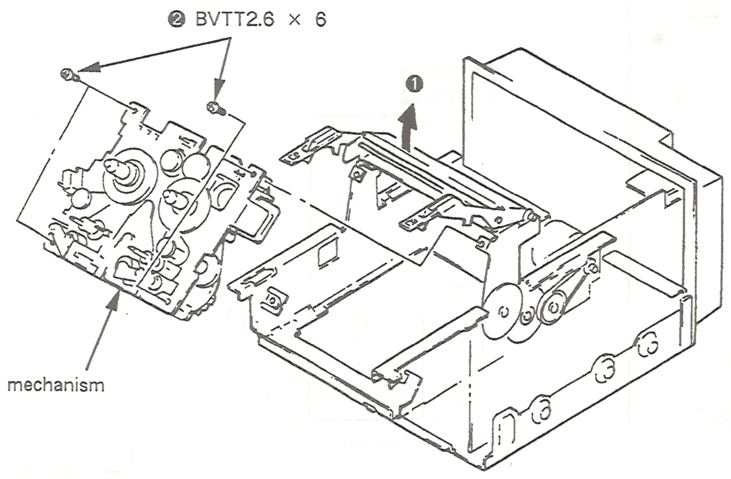
FRONT PANEL


❶ Pull out the five connectors. (CNJ301, 701)
❸
❹
❷ BVTT3 × 6

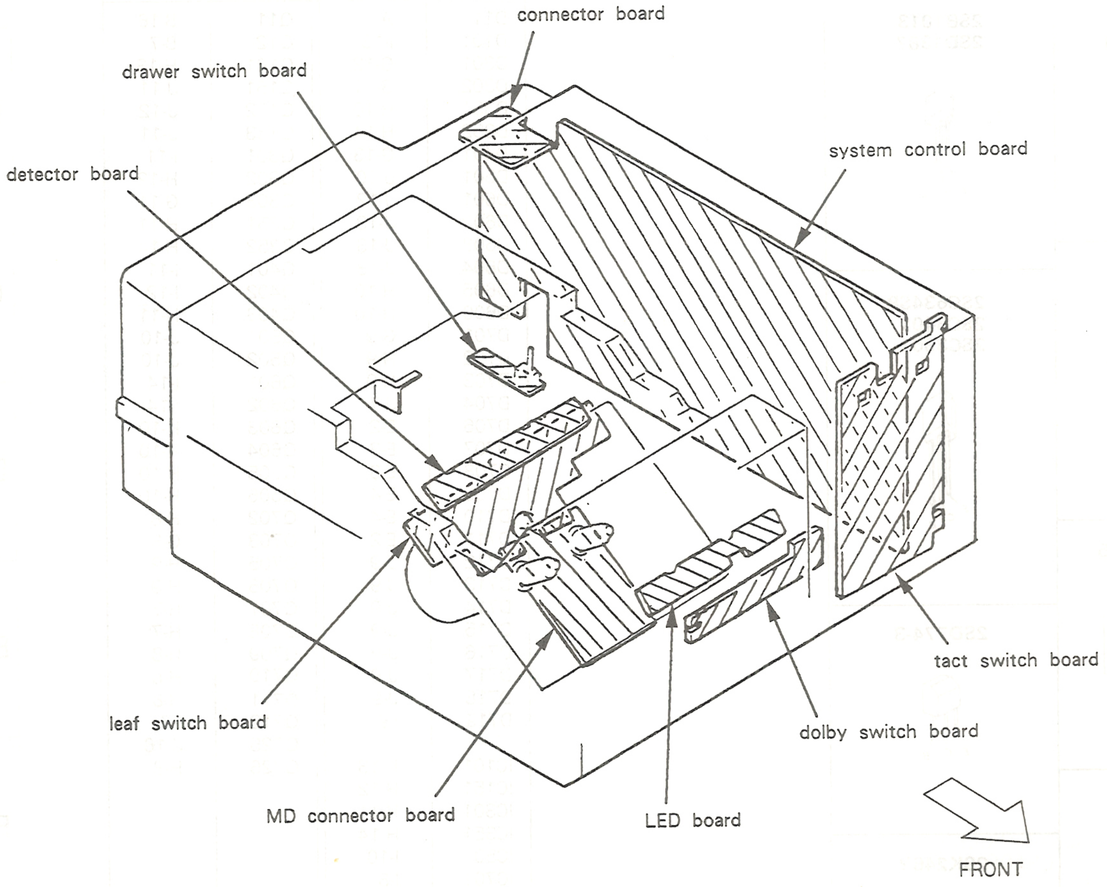
TRAY SECTION


❶ BVTT2.6 × 6
❷ drawer switch board
❸ BVTT2.6 × 6
tray section
❻
❺
❺
❹

MECHANISM


❷ BVTT2.6 × 6
❶
mechanism

CIRCUIT BOARDS LOCATION


connector board
drawer switch board
detector board
system control board
tact switch board
leaf switch board
dolby switch board
MD connector board
LED board
FRONT

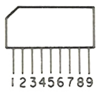
SECTION 3
DIAGRAMS

3-1. PRINTED WIRING BOARDS

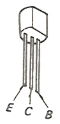
– Conductor Side –

- **Semiconductor Lead Layouts**

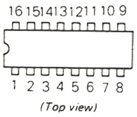
BA3308
μPC4570HA-1



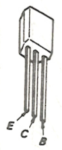
2SB1013
2SD1387



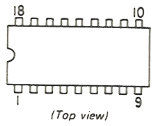
CXA1101P
CXA1198P


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

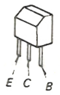
2SC634SP
2SC3401
2SC3901



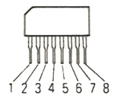
LC6528C-3175


18
10
1
9
(Top view)

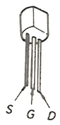
2SD774-3



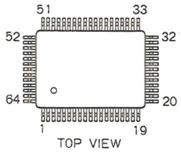
M5218L



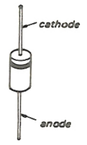
2SK246Y



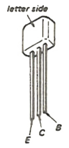
MB88514B-524N


51
33
52
32
64
20
1
19
TOP VIEW

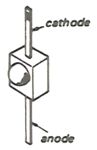
10E2
US1060M
UZL-7H2
UZL-7L2


cathode
anode

BN1A4M


letter side
E C B

AA2222S
PG2222S
PR2222S

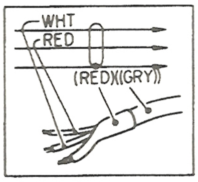

cathode
anode

- **Semiconductor Location**

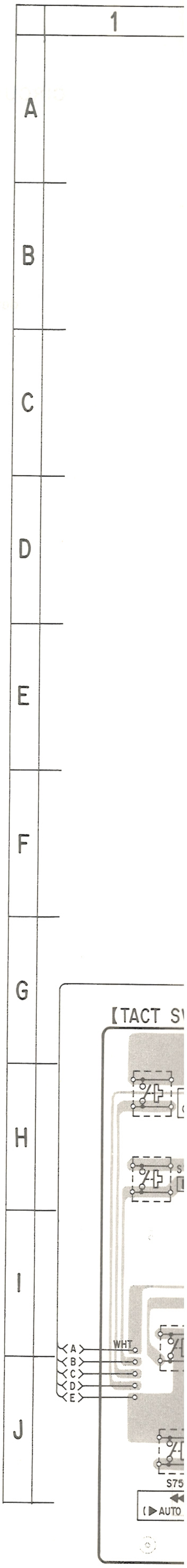
Ref. No.	Location	Ref. No.	Location
D11	A-5	Q11	B-16
D101	I-13	Q12	B-7
D301	G-12	Q101	H-13
D302	G-11	Q151	J-11
D351	H-10	Q152	J-12
D352	H-14	Q153	J-11
D401	G-13	Q301	I-11
D501	J-10	Q302	H-12
D601	J-12	Q303	G-11
D602	J-13	Q351	H-11
D603	J-13	Q352	H-14
D604	J-13	Q401	I-11
D605	H-10	Q402	I-12
D606	H-10	Q403	H-11
D701	G-9	Q501	J-10
D702	H-9	Q502	J-10
D703	H-9	Q601	I-14
D704	J-7	Q602	I-14
D706	E-2	Q603	H-10
D707	E-3	Q604	H-10
D708	E-3	Q605	H-10
D709	E-4	Q606	H-10
D710	E-4	Q702	H-8
D711	E-2	Q703	G-8
D712	J-9	Q705	H-9
D713	J-9	Q706	H-9
D714	J-9	Q707	H-7
D715	J-9	Q708	H-7
D716	J-9	Q709	H-8
D717	J-9	Q710	H-8
D718	J-9	Q711	H-8
D719	I-9	Q712	I-7
		Q725	J-16
IC101	H-13	Q726	H-8
IC151	H-12		
IC301	H-11		
IC351	H-14		
IC501	I-10		
IC701	I-8		
IC702	J-9		
IC703	J-16		

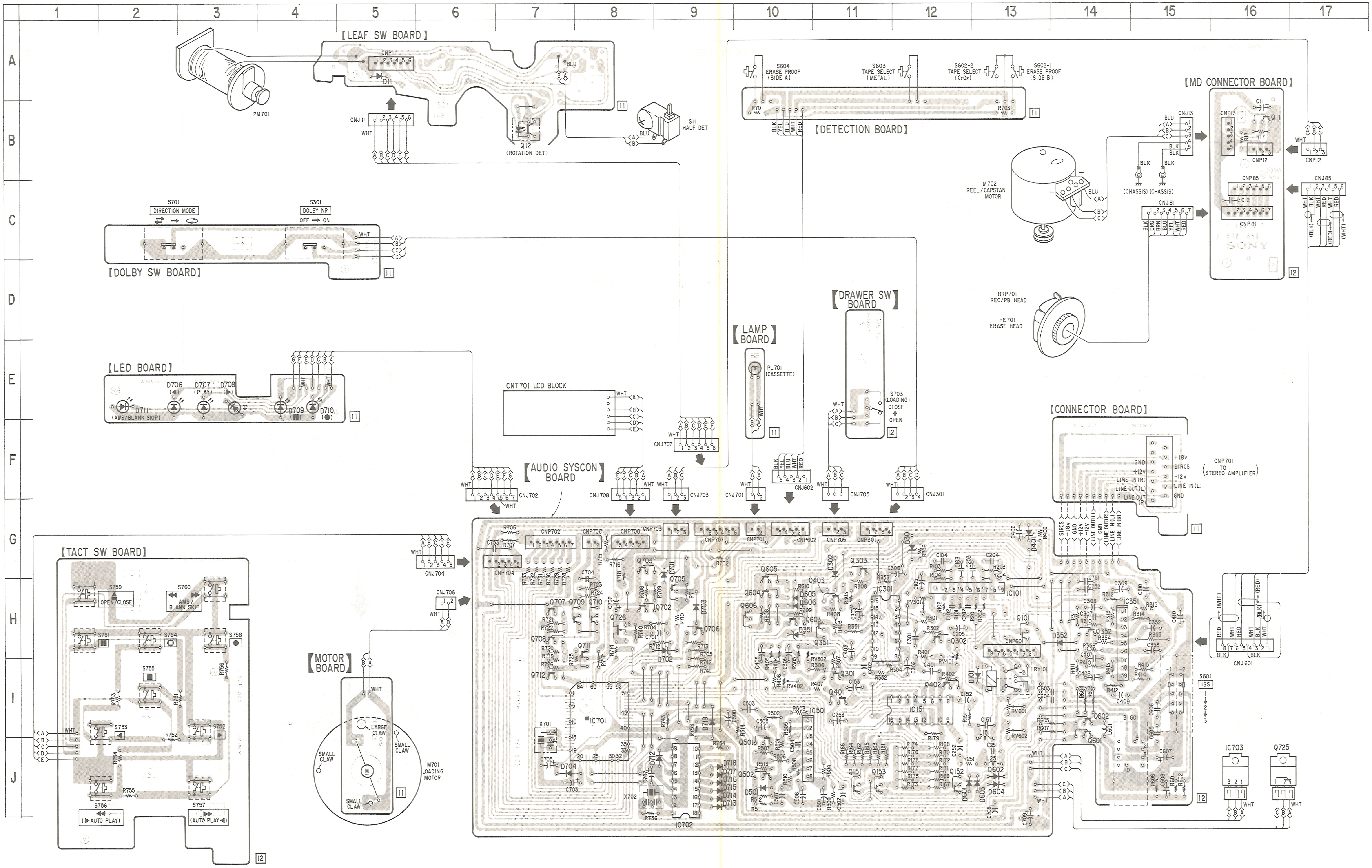
Note

- Color code or sleeving over the end of the jacket.

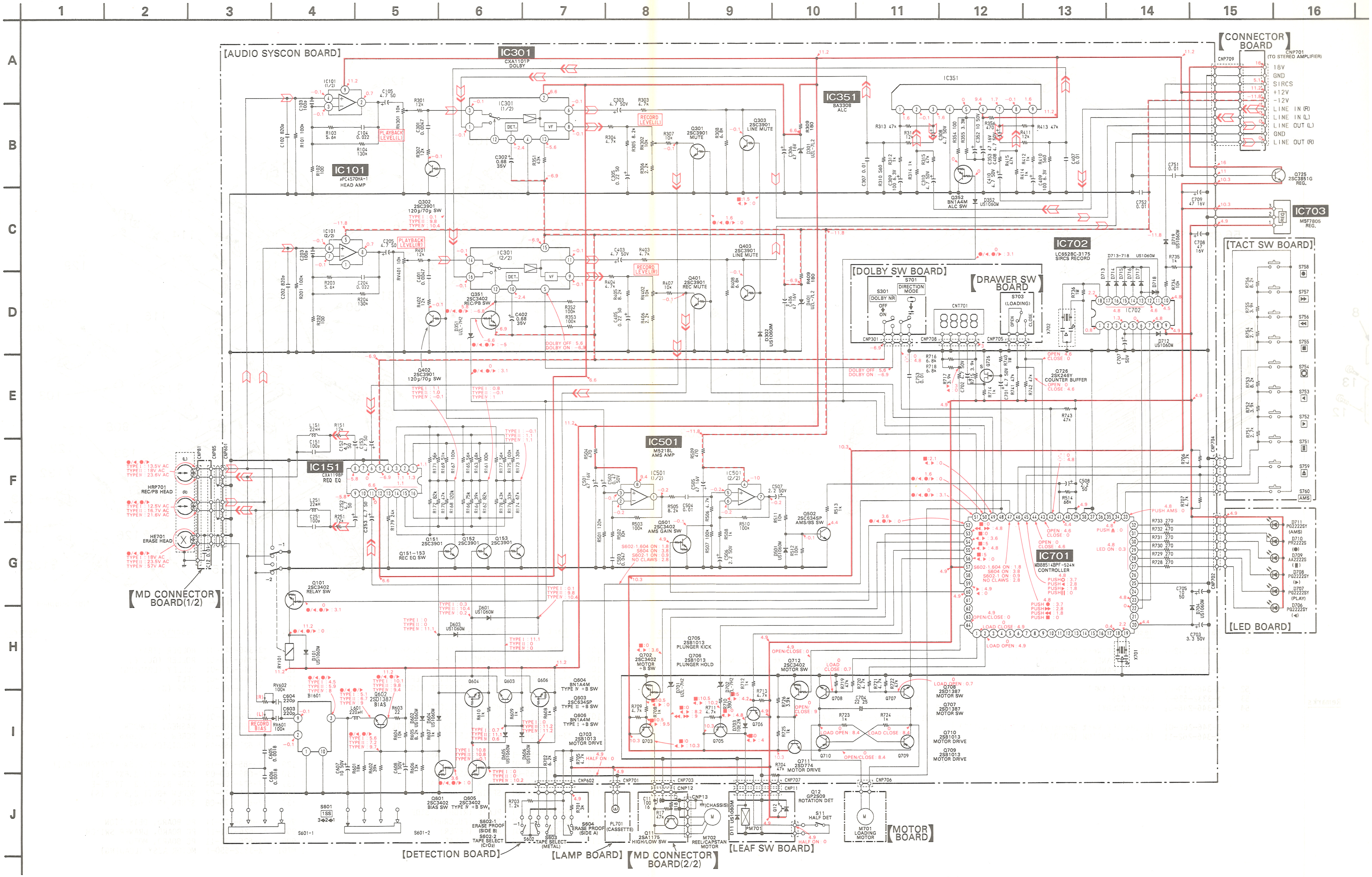

WHT
RED
(RED)(GRY)

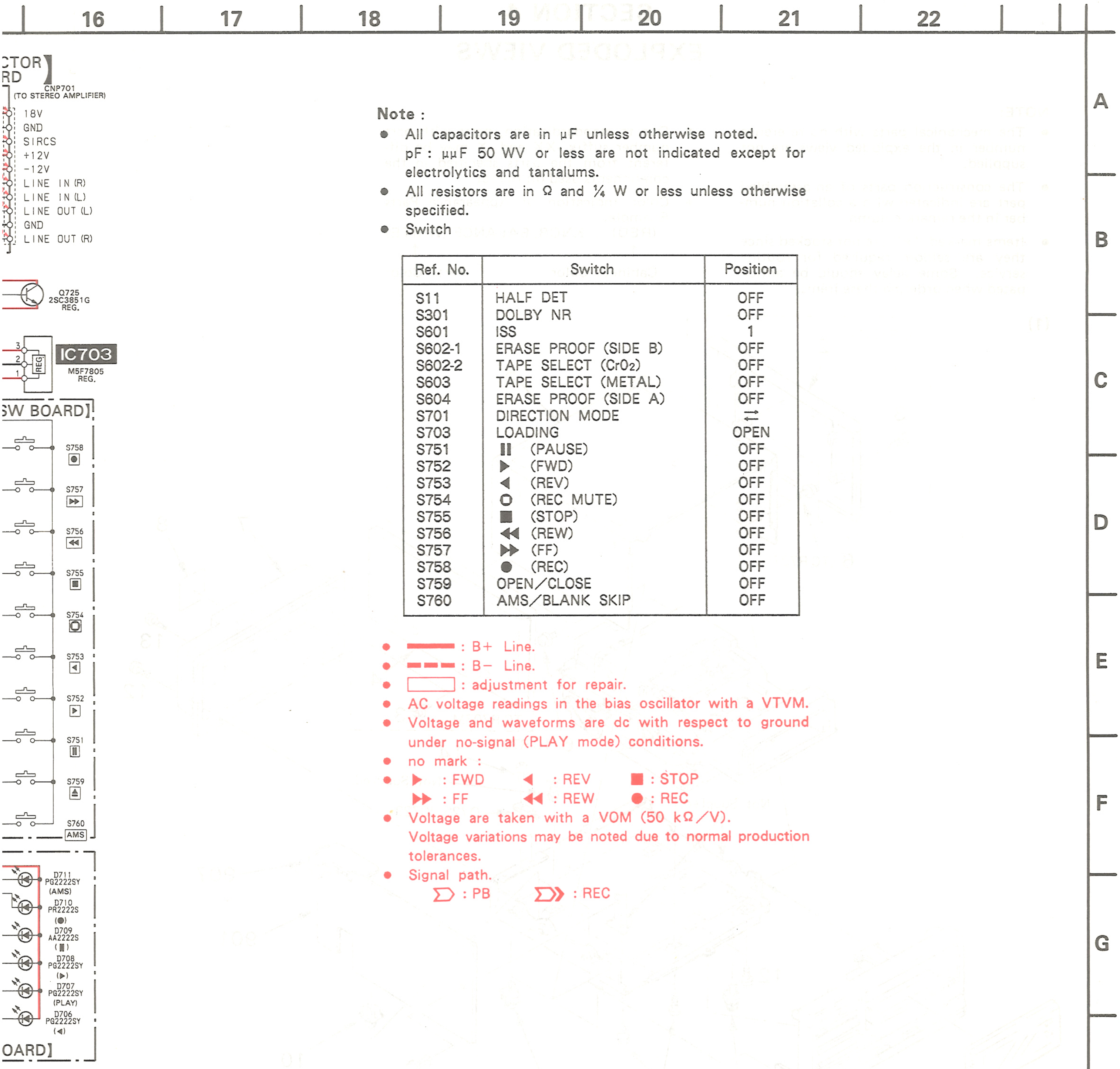
- ○——— : parts extracted from the component side.
- ●——— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.


1
A
B
C
D
E
F
G
H
I
J
【TACT S
WHT
A
B
C
D
E
S75
AUTO


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
【LEAF SW BOARD】
CNP11
D11
PM701
CNJ11
WHT
Q12
(ROTATION DET)
BLU
S11
HALF DET
S604
ERASE PROOF
(SIDE A)
S603
TAPE SELECT
(METAL)
S602-2
TAPE SELECT
(CrO2)
S602-1
ERASE PROOF
(SIDE B)
R701
R703
【DETECTION BOARD】
BLK
YEL
BLU
WHT
RED
【MD CONNECTOR BOARD】
CNJ13
CNP13
CNP12
CNP85
CNP81
CNJ85
CNJ81
M702
REEL/CAPSTAN
MOTOR
(CHASSIS)
(CHASSIS)
S701
DIRECTION MODE
S301
DOLBY NR
OFF → ON
【DOLBY SW BOARD】
HRP701
REC/PB HEAD
HE701
ERASE HEAD
【DRAWER SW BOARD】
S703
(LOADING)
CLOSE
OPEN
【LAMP BOARD】
PL701
(CASSETTE)
【LED BOARD】
D706
D707
(PLAY)
D708
D711
(AMS/BLANK SKIP)
D709
D710
CNT701 LCD BLOCK
CNJ707
【CONNECTOR BOARD】
CNP701
TO
(STEREO AMPLIFIER)
+18V
SIRCS
-12V
LINE IN(L)
GND
+12V
LINE IN(R)
LINE OUT(L)
LINE OUT(R)
【AUDIO SYSCON BOARD】
CNJ702
CNJ708
CNJ703
CNJ701
CNJ602
CNJ705
CNJ301
CNJ704
CNJ706
【TACT SW BOARD】
S759
OPEN/CLOSE
S760
AMS/
BLANK SKIP
S751
S754
S758
S755
S753
S752
S756
(▶AUTO PLAY)
S757
(AUTO PLAY◀)
【MOTOR BOARD】
LARGE
CLAW
SMALL
CLAW
M701
LOADING
MOTOR
IC701
IC702
X701
X702
IC301
IC101
IC351
IC151
IC501
RY101
S601
ISS
B1601
CNJ601
IC703
Q725

3-2. SCHEMATIC DIAGRAM


[AUDIO SYSCON BOARD]
IC301
CXA1101P
DOLBY
IC351
BA3308
ALC
IC101
μPC4570HA-1
HEAD AMP
IC151
CXA1198P
REC EQ
IC501
M5218L
AMS AMP
IC701
MB88514BPF-S24N
CONTROLLER
IC702
LC6528C-3175
SIRCS RECORD
IC703
M5F7805
REG.
[CONNECTOR BOARD]
CNP701
(TO STEREO AMPLIFIER)
18V
GND
SIRCS
+12V
-12V
LINE IN (R)
LINE IN (L)
LINE OUT (L)
GND
LINE OUT (R)
Q725
2SC3851G
REG.
[TACT SW BOARD]
[DOLBY SW BOARD]
S301
DOLBY NR
OFF
ON
S701
DIRECTION MODE
[DRAWER SW BOARD]
S703
(LOADING)
OPEN
CLOSE
[LED BOARD]
HRP701
REC/PB HEAD
HE701
ERASE HEAD
[MD CONNECTOR BOARD(1/2)]
Q101
2SC3402
RELAY SW
Q151-153
REC EQ SW
Q302
2SC3901
120μ/70μ SW
Q402
2SC3901
120μ/70μ SW
Q301
2SC3901
MUTE
Q303
2SC3901
LINE MUTE
Q401
2SC3901
REC MUTE
Q403
2SC3901
LINE MUTE
Q352
BN1A4M
ALC SW
Q351
2SC3402
REC/PB SW
Q501
2SC3402
AMS GAIN SW
Q502
2SC634SP
AMS/BS SW
Q726
2SK246Y
COUNTER BUFFER
Q602
2SD1387
BIAS
Q601
2SC3402
BIAS SW
Q605
2SC3402
TYPE IV +B SW
Q604
BN1A4M
TYPE IV +B SW
Q603
2SC634SP
TYPE II +B SW
Q606
BN1A4M
TYPE I +B SW
Q703
2SB1013
MOTOR DRIVE
Q702
2SC3402
MOTOR +B SW
Q705
2SB1013
PLUNGER KICK
Q706
2SB1013
PLUNGER HOLD
Q712
2SC3402
MOTOR SW
Q708
2SD1387
MOTOR SW
Q707
2SD1387
MOTOR SW
Q710
2SB1013
MOTOR DRIVE
Q709
2SB1013
MOTOR DRIVE
Q711
2SD774
MOTOR DRIVE
[DETECTION BOARD]
S601
S602-1
ERASE PROOF (SIDE B)
S602-2
TAPE SELECT (CrO2)
S603
TAPE SELECT (METAL)
S604
ERASE PROOF (SIDE A)
[LAMP BOARD]
PL701
(CASSETTE)
[MD CONNECTOR BOARD(2/2)]
Q11
2SA1175
HIGH/LOW SW
M702
REEL/CAPSTAN MOTOR
[LEAF SW BOARD]
Q12
GP2S09
ROTATION DET
S11
HALF DET
[MOTOR BOARD]
M701
LOADING MOTOR
TYPE I : 13.5V AC
TYPE II : 18V AC
TYPE IV : 23.6V AC
DOLBY OFF : 5.6
DOLBY ON : -6.9
LOAD OPEN : 4.9
LOAD CLOSE : 4.9


16
17
18
19
20
21
22
A
B
C
D
E
F
G
H
I
J
CTOR
RD
CNP701
(TO STEREO AMPLIFIER)
18V
GND
SIRCS
+12V
-12V
LINE IN (R)
LINE IN (L)
LINE OUT (L)
GND
LINE OUT (R)
Q725
2SC3851G
REG.
3
2
1
REG
IC703
M5F7805
REG.
SW BOARD]
S758
S757
S756
S755
S754
S753
S752
S751
S759
S760
AMS
D711
PG2222SY
(AMS)
D710
PR2222S
(●)
D709
AA2222S
(⏸)
D708
PG2222SY
(▶)
D707
PG2222SY
(PLAY)
D706
PG2222SY
(◀)
OARD]

Note :

- All capacitors are in μF unless otherwise noted. pF : μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- Switch

Ref. No.	Switch	Position
S11	HALF DET	OFF
S301	DOLBY NR	OFF
S601	ISS	1
S602-1	ERASE PROOF (SIDE B)	OFF
S602-2	TAPE SELECT (CrO₂)	OFF
S603	TAPE SELECT (METAL)	OFF
S604	ERASE PROOF (SIDE A)	OFF
S701	DIRECTION MODE	⇄
S703	LOADING	OPEN
S751	⏸ (PAUSE)	OFF
S752	▶ (FWD)	OFF
S753	◀ (REV)	OFF
S754	○ (REC MUTE)	OFF
S755	■ (STOP)	OFF
S756	◀◀ (REW)	OFF
S757	▶▶ (FF)	OFF
S758	● (REC)	OFF
S759	OPEN／CLOSE	OFF
S760	AMS／BLANK SKIP	OFF

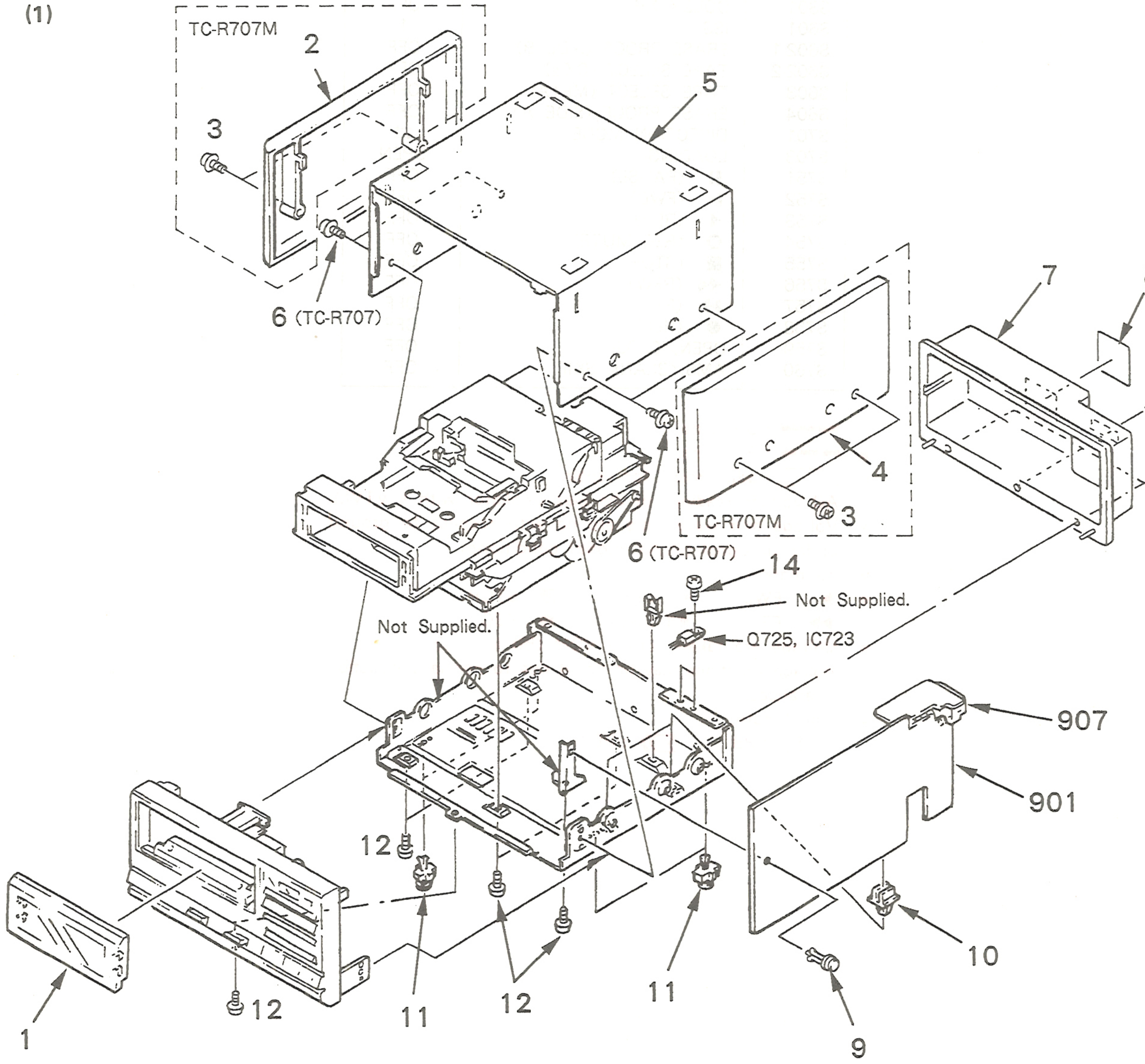
- ━━━ : B+ Line.
- ━ ━ ━ : B– Line.
- ▭ : adjustment for repair.
- AC voltage readings in the bias oscillator with a VTVM.
- Voltage and waveforms are dc with respect to ground under no-signal (PLAY mode) conditions.
- no mark :
- ▶ : FWD ◀ : REV ■ : STOP
  ▶▶ : FF ◀◀ : REW ● : REC
- Voltage are taken with a VOM (50 kΩ／V). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⊃ : PB ⊃⊃ : REC

SECTION 4
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts Color

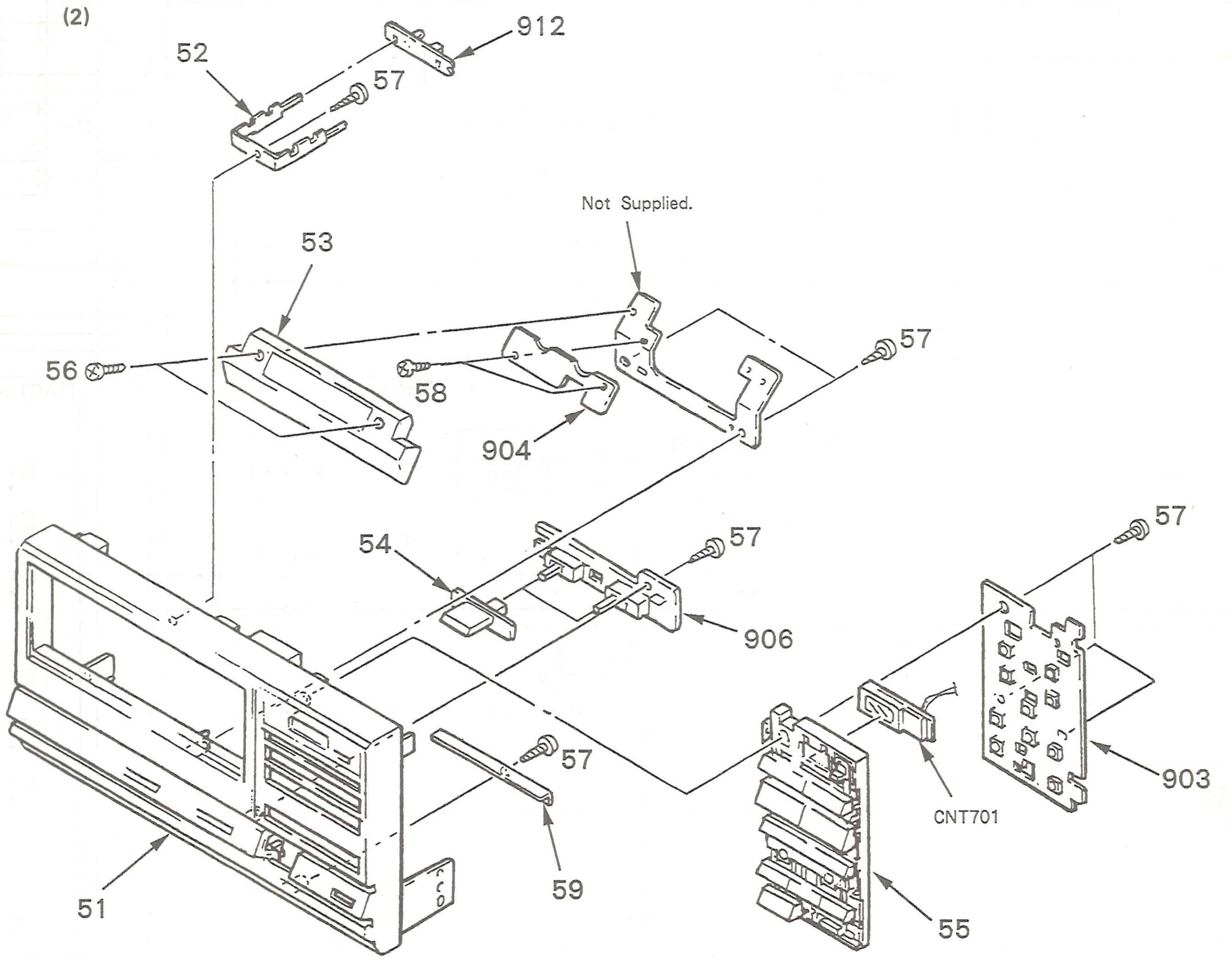
(1)



No.	Part No.	Description	Remarks
1	X-3332-540-1	WINDOW (TRAY) ASSY	
2	4-925-525-01	(R707M)...PLATE (B-L), SIDE	
3	4-886-821-51	(R707M)...SCREW, CASE, (M3X14)	
4	4-925-524-01	(R707M)...PLATE (B-R), SIDE	
5	4-920-118-21	CASE	
6	3-7-4-366-01	(R707)...SCREW (CASE), M3X8	
7	*3-346-251-01	PANEL, BACK	
8	*3-346-268-01	(R707:UK,E)..........LABEL, MODEL NUMBER	
	*3-346-269-01	(R707:West Germany)..LABEL, MODEL NUMBER	
	*3-346-271-01	(R707M:AEP,US).......LABEL, MODEL NUMBER	
	*3-346-272-01	(R707M:West Gremany) ...LABEL, MODEL NUMBER (AE4)	

No.	Part No.	Description	Remarks
9	3-531-576-11	RIVET	
10	*3-642-310-00	HOLDER, CIRCUIT BOARD	
11	X-4902-937-1	FOOT ASSY, RUBBER	
12	7-682-147-01	SCREW +BVTT 3X6 (S)	
13	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
14	7-685-872-01	SCREW +BVTT 3X8	
901	*A-2095-632-A	MOUNTED PCB, SYSTEM CONTROL	
907	*1-626-329-11	PC BOARD, CONNECTOR	
IC703	8-759-604-29	IC M5F7805	
Q725	8-729-303-61	TRANSISTOR 2SC3851G	

(2)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Not Supplied.
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CNT701
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No.	Part No.	Description	Remarks
51	X-3332-542-1	(US,UK,AEP,West Germany) ...PANEL ASSY, FRONT (WHITE)	
	X-3332-543-1	(E).....PANEL ASSY, FRONT (GOLD)	
52	*3-346-219-01	BRACKET (LAMP)	
53	X-3332-539-1	COVER ASSY	
54	3-346-246-01	KNOB (DOLBY)	
55	3-346-262-01	(US,UK,AEP,West Germany)...BUTTON (WHITE)	
	3-346-262-11	(E)......BUTTON (GOLD)	
56	7-621-772-50	SCREW +B 2X10	
57	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
903	*1-626-325-11	PC BOARD, TACT SWITCH	
904	*1-626-326-11	PC BOARD, LED	
906	*1-626-328-11	PC BOARD, DOLBY SWITCH	
912	*1-626-330-11	PC BOARD, LAMP	
CNJ701	1-808-362-11	DISPLAY PANEL, LIQUID CRYSTAL	

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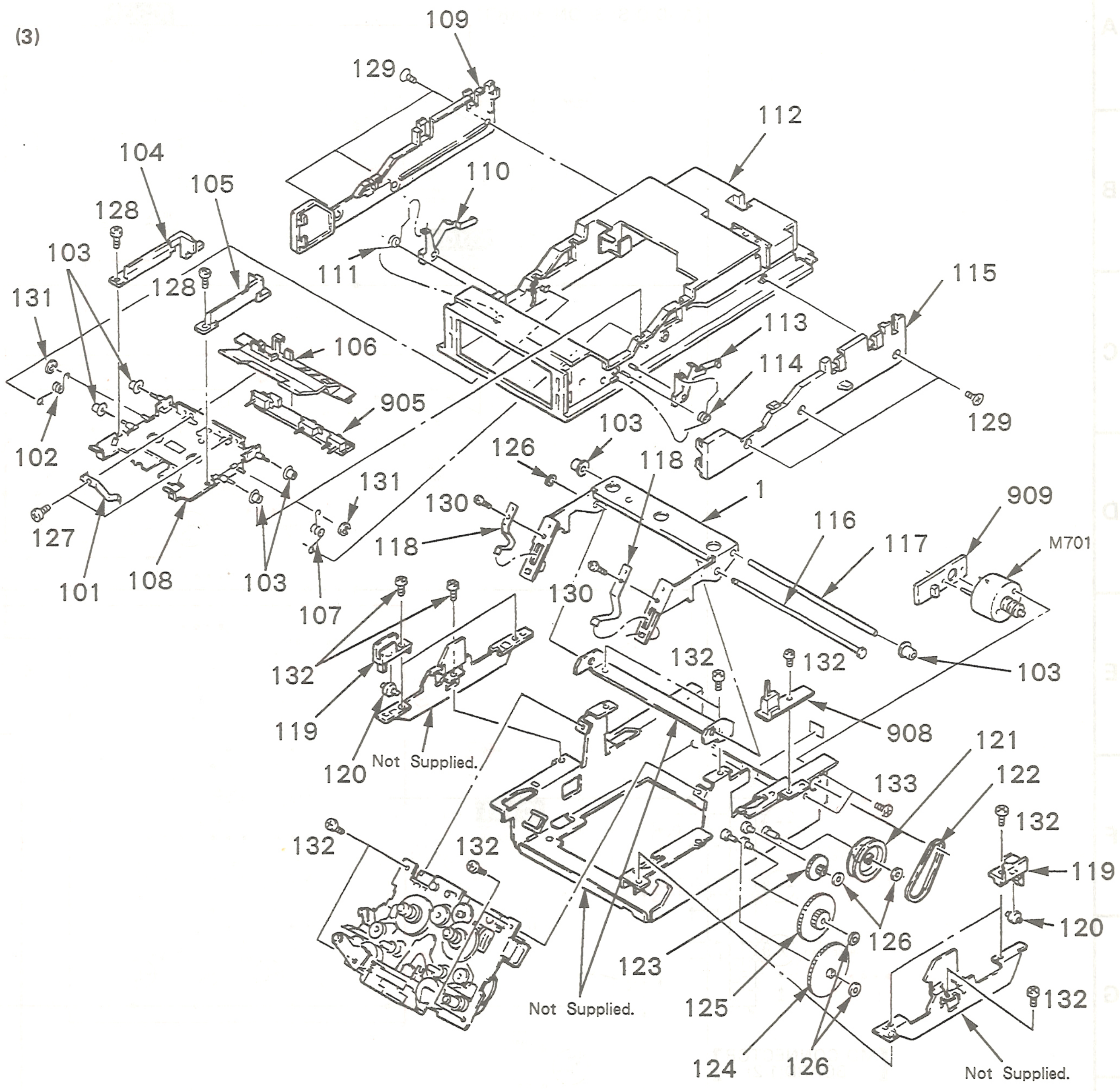
(3)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131
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909
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M701
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Not Supplied.
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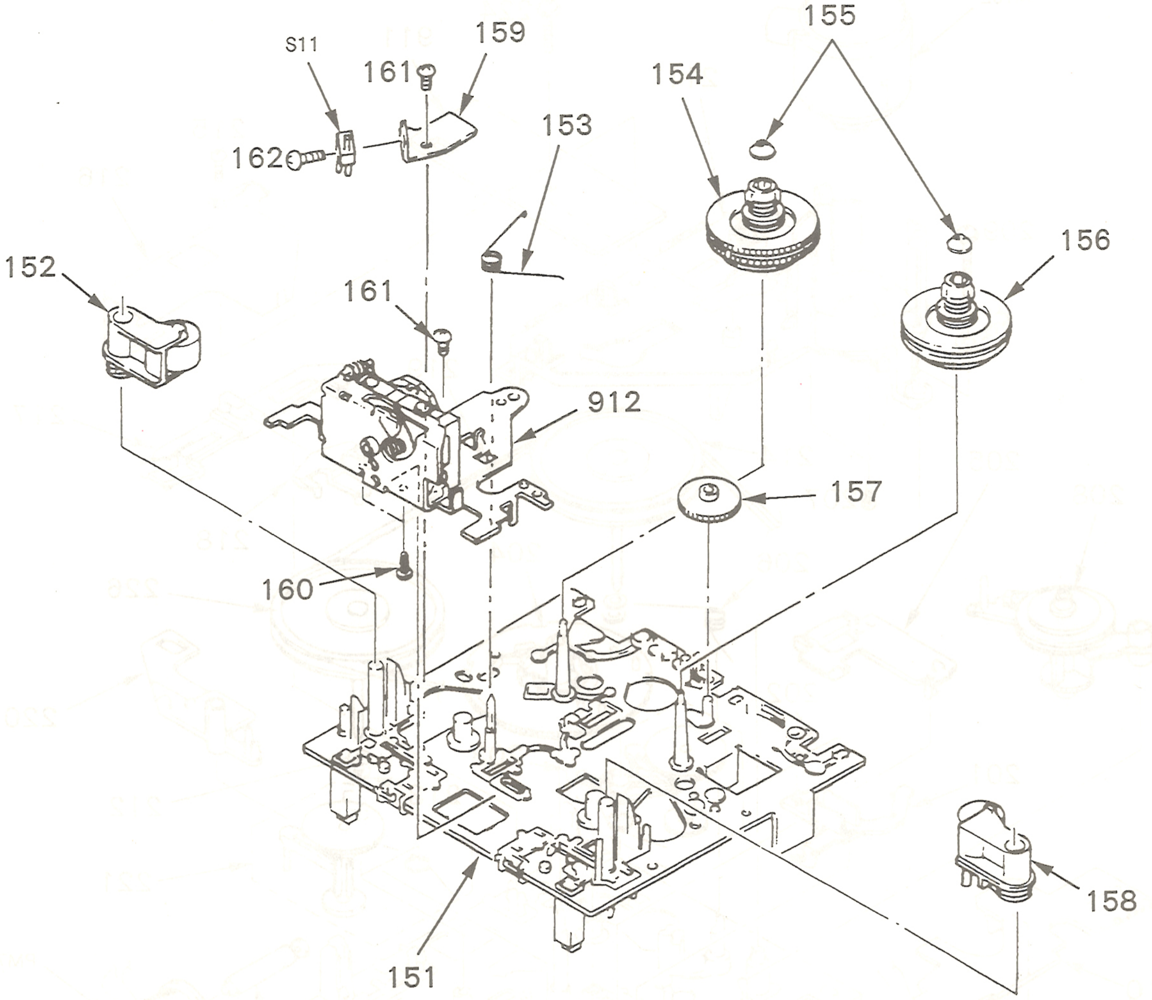
123
Not Supplied.
125
132
124
126
Not Supplied.

No.	Part No.	Description	Remarks
101	3-346-210-01	SPRING (CASSETTE PUSH), LEAF	
102	3-346-236-01	SPRING (RETAINER LEFT)	
103	3-346-223-01	ROLLER	
104	*3-346-227-01	GUIDE (CASSETTE LEFT)	
105	*3-346-226-01	GUIDE (CASSETTE RIGHT)	
106	*3-346-250-01	HOLDER (SELECTOR)	
107	3-346-237-01	SPRING (RETAINER RIGHT)	
108	*X-3332-541-1	RETAINER ASSY, CASSETTE	
109	*3-346-256-01	PLATE (LEFT), SIDE	
110	*X-3332-538-1	LEVER (LEFT) ASSY	
111	3-346-234-01	SPRING	
112	*3-346-255-01	TRAY (CASSETTE)	
113	*X-3332-537-1	LEVER (RIGHT) ASSY	
114	3-346-235-01	SPRING	
115	*3-346-257-01	PLATE (RIGHT), SIDE	
116	*3-346-229-01	SHAFT (FULCRUM)	
117	*3-346-230-01	SHAFT (LEVER)	
118	3-346-211-01	SPRING, LEAF	
119	*3-346-244-01	HOLDER (TRAY)	
120	*3-346-216-01	ROLLER (GUIDE)	
121	3-346-213-01	PULLEY (LOADING)	
122	3-346-287-01	BELT	
123	3-346-289-01	GEAR (C)	
124	3-346-215-01	GEAR (B)	
125	3-346-214-01	GEAR (A)	
126	3-558-708-21	WASHER, STOPPER	
127	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
128	7-627-853-48	PRECISION SCREW +P 2X4 TYPE 3	
129	7-685-233-19	SCREW +KTP 2.6X6 TYPE2NON-SLIT	
130	7-685-860-09	SCREW +BVTT 2.6X4 (S)	
131	7-624-105-04	STOP RING 2.3, TYPE -E	
132	7-621-770-67	SCREW +BVTT 2.6X6 (S)	
133	7-621-775-08	SCREW +B 2.6X3	
905	*1-626-327-11	PC BOARD, DETECTION	
908	*1-626-331-11	PC BOARD, DRAWER SWITCH	
909	*1-626-332-11	PC BOARD, MOTOR	
M701	X-3332-550-1	MOTOR ASSY (LOADING)	

(4)


S11
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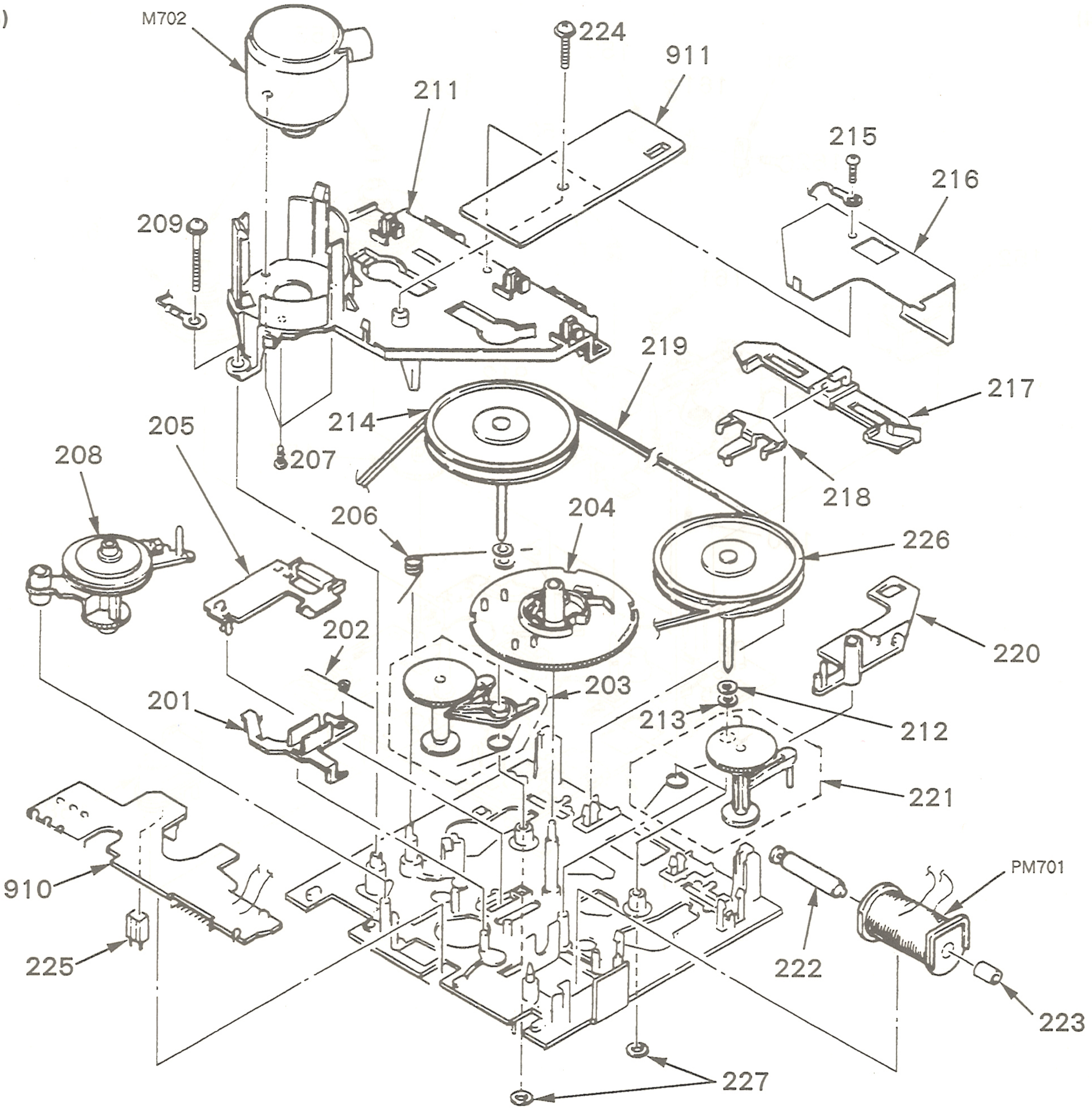
No.	Part No.	Description	Remarks
151	*X-3343-418-1	CHASSIS ASSY, MECHANICAL	
152	X-3343-403-1	LEVER (PINCH LEVER REV) ASSY	
153	3-343-401-01	SPRING, TORSION	
155	3-343-439-01	CAP (REEL TABLE)	
156	X-3343-401-1	TABEL ASSY, REEL	
157	3-343-411-01	GEAR (FF GEAR)	
158	X-3343-402-1	LEVER (PINCH LEVER FWD) ASSY	
159	*3-343-478-01	BRACKET (SW)	
160	7-685-102-19	SCREW +P 2X4 NON-SLIT TYPE 2	
161	7-621-773-86	SCREW +BVTT 2.6X4 (S)	
162	7-621-772-30	SCREW +B 2X6	
912	A-2108-123-A	PC BOARD ASSY, HEAD	

(5)



No.	Part No.	Description	Remarks
201	3-343-453-01	SLIDER (BRAKE PLATE)	
202	3-343-429-01	SPRING, TORSION	
203	X-3343-406-1	LEVER (TU ARM REV) ASSY	
204	3-343-470-01	GEAR (CAM GEAR)	
205	*3-343-461-01	SLIDER	
206	3-343-430-01	SPRING, TORSION	
207	7-627-556-28	SCREW +P 2.6X3.5	
208	X-3343-414-1	LAVER (FR ARM) ASSY	
209	3-343-403-01	SCREW (PTTWH 2X18)	
211	*X-3343-407-1	BASE (THRUST RETAINER) ASSY	
212	4-605-835-11	WASHER (2.6), POLYSLIDER	
213	3-307-482-00	WASHER, LUMILER	
214	X-3343-411-1	FLYWHEEL COMPLETE ASSY	
215	7-685-102-19	SCREW +P 2X4 NON-SLIT TYPE 2	
216	*3-343-471-01	PLATE, SHIELD	
217	*3-343-457-01	SLIDER (REVERSE SLIDER)	
218	3-343-462-01	LEVER	
219	3-343-426-01	BELT (CAPSTAN BELT SQUARE)	
220	*3-343-456-01	LEVER (PM LEVER)	
221	X-3343-405-1	LEVER (TU ARM FWD) ASSY	
222	*3-343-425-01	ARBOR (MOVABLE IRON ARBOR), IRON	
223	*3-343-424-01	ARBOR (FIXED IRON ARBOR), IRON	
224	3-343-404-01	SCREW (PTPWH 2X10)	
225	*3-343-419-01	HOLDER (S SENSER A)	
226	X-3343-416-1	FLYWHEEL (REV) COMPLETE ASSY	
227	3-343-473-01	WASHER, NYLON	
254	X-3343-415-1	TABEL (REV) ASSY, REEL	
258	7-621-770-67	SCREW +BVTT 2.6X6 (S)	
910	*1-624-148-13	PC BOARD, LEAF SW	
911	*1-626-217-11	PC BOARD, MD CONNECTOR	
M702	X-3343-408-1	MOTOR ASSY (REEL/CAPSTAN)	
PM701	1-454-456-11	SOLENOID, PLUNGER	

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

Ref.No.	Part No.	Description			
901	*A-2095-632-A	MOUNTED PCB, SYSTEM CONTROL			
902	A-2108-123-A	PC BOARD ASSY, HEAD			
903	*1-626-325-11	PC BOARD, TACT SWITCH			
904	*1-626-326-11	PC BOARD, LED			
905	*1-626-327-11	PC BOARD, DETECTION			
906	*1-626-328-11	PC BOARD, DOLBY SWITCH			
907	*1-626-329-11	PC BOARD, CONNECTOR			
908	*1-626-331-11	PC BOARD, DRAWER SWITCH			
909	*1-626-332-11	PC BOARD, MOTOR			
910	*1-624-148-13	PC BOARD, LEAF SW			
911	*1-626-217-11	PC BOARD, MD CONNECTOR			
912	A-2108-123-A	PC BOARD ASSY, HEAD			
912	*1-626-330-11	PC BOARD, LAMP			
BI601	1-464-934-11	OSCILLATION UNIT, BIAS			
C11	1-126-101-11	ELECT	100MF	20%	16V
C12	1-161-379-00	CERAMIC	0.01MF	30%	16V
C102	1-162-293-31	CERAMIC	820PF	10%	50V
C103	1-162-282-31	CERAMIC	100PF	10%	50V
C104	1-136-157-00	FILM	0.022MF	5%	50V
C105	1-124-927-11	ELECT	4.7MF	20%	50V
C151	1-162-282-31	CERAMIC	100PF	10%	50V
C152	1-124-927-11	ELECT	4.7MF	20%	50V
C153	1-124-927-11	ELECT	4.7MF	20%	50V
C202	1-162-293-31	CERAMIC	820PF	10%	50V
C203	1-162-282-31	CERAMIC	100PF	10%	50V
C204	1-136-157-00	FILM	0.022MF	5%	50V
C205	1-124-927-11	ELECT	4.7MF	20%	50V
C251	1-162-282-31	CERAMIC	100PF	10%	50V
C252	1-124-927-11	ELECT	4.7MF	20%	50V
C253	1-124-927-11	ELECT	4.7MF	20%	50V
C301	1-130-479-00	MYLAR	0.0047MF	5%	50V
C302	1-131-346-00	TANTALUM	0.68MF	10%	35V
C303	1-124-927-11	ELECT	4.7MF	20%	50V
C305	1-124-464-11	ELECT	0.22MF	20%	50V
C306	1-124-477-11	ELECT	47MF	20%	16V
C307	1-161-379-00	CERAMIC	0.01MF	30%	16V
C308	1-124-927-11	ELECT	4.7MF	20%	50V
C309	1-124-443-00	ELECT	100MF	20%	6.3V
C310	1-124-927-11	ELECT	4.7MF	20%	50V
C352	1-123-875-11	ELECT	10MF	20%	50V
C353	1-124-477-11	ELECT	47MF	20%	16V
C401	1-130-479-00	MYLAR	0.0047MF	5%	50V
C402	1-131-346-00	TANTALUM	0.68MF	10%	35V
C403	1-124-927-11	ELECT	4.7MF	20%	50V
C405	1-124-464-11	ELECT	0.22MF	20%	50V
C406	1-124-477-11	ELECT	47MF	20%	16V
C407	1-161-379-00	CERAMIC	0.01MF	30%	16V
C408	1-124-927-11	ELECT	4.7MF	20%	50V
C409	1-124-443-00	ELECT	100MF	20%	6.3V
C410	1-124-927-11	ELECT	4.7MF	20%	50V
C501	1-124-477-11	ELECT	47MF	20%	16V
C502	1-124-902-00	ELECT	0.47MF	20%	50V
C503	1-136-161-00	FILM	0.047MF	5%	50V
C504	1-161-379-00	CERAMIC	0.01MF	30%	16V
C505	1-124-477-11	ELECT	47MF	20%	16V
C506	1-124-925-11	ELECT	2.2MF	20%	50V
C507	1-124-925-11	ELECT	2.2MF	20%	50V
C508	1-124-925-11	ELECT	2.2MF	20%	50V
C603	1-162-286-31	CERAMIC	220PF	10%	50V
C604	1-162-286-31	CERAMIC	220PF	10%	50V
C605	1-106-349-00	MYLAR	0.0018MF	10%	100V
C606	1-106-349-00	MYLAR	0.0018MF	10%	100V
C607	1-123-875-11	ELECT	10MF	20%	50V
C608	1-124-499-11	ELECT	1MF	20%	50V
C701	1-124-927-11	ELECT	4.7MF	20%	50V
C702	1-124-927-11	ELECT	4.7MF	20%	50V
C703	1-123-382-00	ELECT	3.3MF	20%	50V
C704	1-124-282-00	ELECT	22MF	20%	25V
C705	1-123-875-11	ELECT	10MF	20%	50V
C707	1-124-499-11	ELECT	1MF	20%	50V
C708	1-124-477-11	ELECT	47MF	20%	16V
C709	1-124-477-11	ELECT	47MF	20%	16V
C751	1-161-379-00	CERAMIC	0.01MF	30%	16V
C752	1-161-379-00	CERAMIC	0.01MF	30%	16V
C753	1-161-379-00	CERAMIC	0.01MF	30%	16V
CNJ701	1-808-362-11	DISPLAY PANEL, LIQUID CRYSTAL			
CNP11	*1-564-499-11	PIN, CONNECTOR 6P			
CNP12	*1-564-337-00	PIN, CONNECTOR 3P			
CNP13	*1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P			
CNP18	*1-564-718-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CNP81	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CNP85	*1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CNP301	*1-564-338-00	PIN, CONNECTOR 4P			
CNP601	*1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P			
CNP602	*1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P			
CNP701	*1-564-336-00	PIN, CONNECTOR 2P			
CNP702	*1-564-341-11	PIN, CONNECTOR 7P			
CNP703	*1-564-337-00	PIN, CONNECTOR 3P			

Ref.No.	Part No.	Description
CNP704	*1-564-339-00	PIN, CONNECTOR 5P
CNP705	*1-564-337-71	PIN, CONNECTOR 3P
CNP706	*1-564-336-71	PIN, CONNECTOR 2P
CNP707	*1-564-340-00	PIN, CONNECTOR 6P
CNP708	*1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P
CNP709	1-564-610-21	CONNECTOR, BOARD TO BOARD
CNP710	*1-565-291-11	SOCKET, CONNECTOR 13P
D11	8-719-000-26	DIODE US1060M
D101	8-719-000-26	DIODE US1060M
D301	8-719-000-76	DIODE UZL-7L2
D302	8-719-000-26	DIODE US1060M
D351	8-719-000-96	DIODE UZL-7H2
D352	8-719-000-26	DIODE US1060M
D401	8-719-000-78	DIODE UZL-7L2
D501	8-719-000-26	DIODE US1060M
D601	8-719-000-26	DIODE US1060M
D602	8-719-000-26	DIODE US1060M
D603	8-719-000-26	DIODE US1060M
D604	8-719-000-26	DIODE US1060M
D605	8-719-000-26	DIODE US1060M
D606	8-719-000-26	DIODE US1060M
D701	8-719-000-96	DIODE UZL-7H2
D702	8-719-000-96	DIODE UZL-7H2
D703	8-719-200-77	DIODE 10E2N
D704	8-719-000-26	DIODE US1060M
D706	8-719-922-23	DIODE PG2222SX
D707	8-719-922-23	DIODE PG2222SX
D708	8-719-922-23	DIODE PG2222SX
D709	8-719-907-53	DIODE AA2222S
D710	8-719-922-21	DIODE PR2222S
D711	8-719-922-23	DIODE PG2222SX
D712	8-719-000-26	DIODE US1060M
D713	8-719-000-26	DIODE US1060M
D714	8-719-000-26	DIODE US1060M
D715	8-719-000-26	DIODE US1060M
D716	8-719-000-26	DIODE US1060M
D717	8-719-000-26	DIODE US1060M
D718	8-719-000-26	DIODE US1060M
D719	8-719-000-26	DIODE US1060M
IC101	8-759-112-93	IC UPC4570HA-1
IC151	8-752-032-60	IC CXA1198P
IC301	8-752-031-83	IC CXA1101P
IC351	8-759-939-73	IC BA3308
IC501	8-759-600-02	IC M5218L
IC701	8-759-972-68	IC MB88514B-524N
IC702	8-759-803-33	IC LC6528C-3175
IC703	8-759-604-29	IC M5F7805

Ref.No.	Part No.	Description
L151	1-410-779-21	INDUCTOR 22MMH
L251	1-410-779-21	INDUCTOR 22MMH
L601	1-408-425-00	INDUCTOR 220UH
M701	X-3332-550-1	MOTOR ASSY (LOADING)
M702	X-3343-408-1	MOTOR ASSY (REEL/CAPSTAN)
PL701	1-518-633-11	LAMP, PILOT
PM701	1-454-456-11	SOLENOID, PLUNGER
Q11	8-729-117-54	TRANSISTOR 2SA1175
Q12	8-719-939-23	TRANSISTOR GP2S09-C
Q101	8-729-806-28	TRANSISTOR 2SC3402
Q151	8-729-806-26	TRANSISTOR 2SC3901
Q152	8-729-806-26	TRANSISTOR 2SC3901
Q153	8-729-806-26	TRANSISTOR 2SC3901
Q301	8-729-806-26	TRANSISTOR 2SC3901
Q302	8-729-806-26	TRANSISTOR 2SC3901
Q303	8-729-806-26	TRANSISTOR 2SC3901
Q351	8-729-806-28	TRANSISTOR 2SC3402
Q352	8-729-115-15	TRANSISTOR BN1A4M
Q401	8-729-806-26	TRANSISTOR 2SC3901
Q402	8-729-806-26	TRANSISTOR 2SC3901
Q403	8-729-806-26	TRANSISTOR 2SC3901
Q501	8-729-806-28	TRANSISTOR 2SC3402
Q502	8-729-600-27	TRANSISTOR 2SC634SP
Q601	8-729-806-26	TRANSISTOR 2SC3402
Q602	8-729-801-93	TRANSISTOR 2SD1387
Q603	8-729-600-27	TRANSISTOR 2SC634SP
Q604	8-729-115-15	TRANSISTOR BN1A4M
Q605	8-729-806-28	TRANSISTOR 2SC3402
Q606	8-729-115-15	TRANSISTOR BN1A4M
Q702	8-729-806-28	TRANSISTOR 2SC3402
Q703	8-729-801-83	TRANSISTOR 2SB1013
Q705	8-729-801-83	TRANSISTOR 2SB1013
Q706	8-729-801-83	TRANSISTOR 2SB1013
Q707	8-729-801-93	TRANSISTOR 2SD1387
Q708	8-729-801-93	TRANSISTOR 2SD1387
Q709	8-729-801-83	TRANSISTOR 2SB1013
Q710	8-729-801-83	TRANSISTOR 2SB1013
Q711	8-729-177-42	TRANSISTOR 2SD774-3
Q712	8-729-806-26	TRANSISTOR 2SC3402
Q725	8-729-303-61	TRANSISTOR 2SC3851G
Q726	8-729-224-61	TRANSISTOR 2SK246Y
R14	1-249-408-11	CARBON 180 5% 1/4W
R17	1-249-437-11	CARBON 47K 5% 1/4W
R18	1-249-437-11	CARBON 47K 5% 1/4W

Ref.No.	Part No.	Description			
R101	1-249-441-11	CARBON	100K	5%	1/4W
R102	1-249-405-11	CARBON	100	5%	1/4W
R103	1-249-426-11	CARBON	5.6K	5%	1/4W
R104	1-215-472-00	CARBON	130K	5%	1/4W
R151	1-249-430-11	CARBON	12K	5%	1/4W
R161	1-249-441-11	CARBON	100K	5%	1/4W
R162	1-249-440-11	CARBON	82K	5%	1/4W
R163	1-249-439-11	CARBON	68K	5%	1/4W
R164	1-249-436-11	CARBON	39K	5%	1/4W
R165	1-249-438-11	CARBON	56K	5%	1/4W
R166	1-249-464-00	CARBON	75K	5%	1/4W
R167	1-249-441-11	CARBON	100K	5%	1/4W
R168	1-249-878-00	CARBON	200K	5%	1/4W
R169	1-215-462-00	CARBON	51K	5%	1/4W
R170	1-249-437-11	CARBON	47K	5%	1/4W
R171	1-249-438-11	CARBON	56K	5%	1/4W
R172	1-249-440-11	CARBON	82K	5%	1/4W
R173	1-215-472-00	CARBON	130K	5%	1/4W
R174	1-249-437-11	CARBON	62K	5%	1/4W
R175	1-249-441-11	CARBON	100K	5%	1/4W
R176	1-249-435-11	CARBON	33K	5%	1/4W
R177	1-249-438-11	CARBON	56K	5%	1/4W
R178	1-215-460-00	CARBON	43K	5%	1/4W
R179	1-215-454-00	CARBON	24K	5%	1/4W
R201	1-249-441-11	CARBON	100K	5%	1/4W
R202	1-249-405-11	CARBON	100	5%	1/4W
R203	1-249-426-11	CARBON	5.6K	5%	1/4W
R204	1-215-472-00	CARBON	130K	5%	1/4W
R251	1-249-430-11	CARBON	12K	5%	1/4W
R301	1-249-430-11	CARBON	12K	5%	1/4W
R302	1-249-430-11	CARBON	12K	5%	1/4W
R303	1-249-425-11	CARBON	4.7K	5%	1/4W
R304	1-249-425-11	CARBON	4.7K	5%	1/4W
R305	1-249-428-11	CARBON	8.2K	5%	1/4W
R306	1-249-421-11	CARBON	2.2K	5%	1/4W
R307	1-249-429-11	CARBON	10K	5%	1/4W
R308	1-249-427-11	CARBON	6.8K	5%	1/4W
R309	1-249-408-11	CARBON	180	5%	1/4W
R310	1-249-414-11	CARBON	560	5%	1/4W
R311	1-249-430-11	CARBON	12K	5%	1/4W
R312	1-249-417-11	CARBON	1K	5%	1/4W
R313	1-249-437-11	CARBON	47K	5%	1/4W
R314	1-249-417-11	CARBON	1K	5%	1/4W
R315	1-249-437-11	CARBON	47K	5%	1/4W
R351	1-215-460-00	CARBON	43K	5%	1/4W

Ref.No.	Part No.	Description			
R352	1-249-441-11	CARBON	100K	5%	1/4W
R353	1-249-441-11	CARBON	100K	5%	1/4W
R354	1-249-405-11	CARBON	100	5%	1/4W
R355	1-210-825-00	SOLID	3.3M	5%	1/4W
R356	1-249-413-11	CARBON	470	5%	1/4W
R401	1-249-430-11	CARBON	12K	5%	1/4W
R402	1-249-430-11	CARBON	12K	5%	1/4W
R403	1-249-425-11	CARBON	4.7K	5%	1/4W
R404	1-249-425-11	CARBON	4.7K	5%	1/4W
R405	1-249-428-11	CARBON	8.2K	5%	1/4W
R406	1-249-421-11	CARBON	2.2K	5%	1/4W
R407	1-249-429-11	CARBON	10K	5%	1/4W
R408	1-249-427-11	CARBON	6.8K	5%	1/4W
R409	1-249-408-11	CARBON	180	5%	1/4W
R410	1-249-414-11	CARBON	560	5%	1/4W
R411	1-249-430-11	CARBON	12K	5%	1/4W
R412	1-249-417-11	CARBON	1K	5%	1/4W
R413	1-249-437-11	CARBON	47K	5%	1/4W
R414	1-249-417-11	CARBON	1K	5%	1/4W
R415	1-249-437-11	CARBON	47K	5%	1/4W
R501	1-247-881-00	CARBON	120K	5%	1/4W
R502	1-249-429-11	CARBON	10K	5%	1/4W
R503	1-249-441-11	CARBON	100K	5%	1/4W
R504	1-249-413-11	CARBON	470	5%	1/4W
R505	1-249-428-11	CARBON	8.2K	5%	1/4W
R506	1-249-425-11	CARBON	4.7K	5%	1/4W
R507	1-249-441-11	CARBON	100K	5%	1/4W
R508	1-249-417-11	CARBON	1K	5%	1/4W
R509	1-249-413-11	CARBON	470	5%	1/4W
R510	1-249-441-11	CARBON	100K	5%	1/4W
R511	1-249-429-11	CARBON	10K	5%	1/4W
R512	1-249-441-11	CARBON	100K	5%	1/4W
R513	1-249-417-11	CARBON	1K	5%	1/4W
R514	1-249-439-11	CARBON	68K	5%	1/4W
R601	1-249-432-11	CARBON	18K	5%	1/4W
R602	1-249-436-11	CARBON	39K	5%	1/4W
R603	1-249-397-11	CARBON	22	5%	1/4W
R604	1-249-429-11	CARBON	10K	5%	1/4W
R605	1-249-428-11	CARBON	8.2K	5%	1/4W
R606	1-215-448-00	CARBON	13K	5%	1/4W
R607	1-249-417-11	CARBON	1K	5%	1/4W
R608	1-249-417-11	CARBON	1K	5%	1/4W
R609	1-249-417-11	CARBON	1K	5%	1/4W
R610	1-249-417-11	CARBON	1K	5%	1/4W
R701	1-215-432-00	CARBON	3K	5%	1/4W

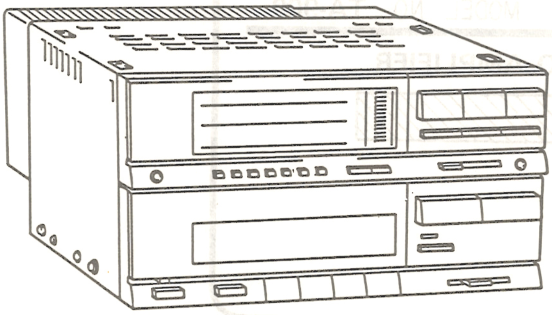
Ref.No.	Part No.	Description			
R702	1-215-440-00	CARBON	6.2K	5%	1/4W
R703	1-249-418-11	CARBON	1.2K	5%	1/4W
R704	1-249-437-11	CARBON	47K	5%	1/4W
R705	1-249-425-11	CARBON	4.7K	5%	1/4W
R706	1-249-425-11	CARBON	4.7K	5%	1/4W
R707	1-249-425-11	CARBON	4.7K	5%	1/4W
R708	1-249-417-11	CARBON	1K	5%	1/4W
R709	1-249-425-11	CARBON	4.7K	5%	1/4W
R710	1-249-417-11	CARBON	390	5%	1/4W
R711	1-249-425-11	CARBON	4.7K	5%	1/4W
R712	1-249-417-11	CARBON	1K	5%	1/4W
R713	1-249-425-11	CARBON	4.7K	5%	1/4W
R714	1-249-417-11	CARBON	1K	5%	1/4W
R715	1-249-424-11	CARBON	3.9K	5%	1/4W
R716	1-249-427-11	CARBON	6.8K	5%	1/4W
R717	1-249-424-11	CARBON	3.9K	5%	1/4W
R718	1-249-427-11	CARBON	6.8K	5%	1/4W
R719	1-249-437-11	CARBON	47K	5%	1/4W
R720	1-249-425-11	CARBON	4.7K	5%	1/4W
R721	1-249-425-11	CARBON	4.7K	5%	1/4W
R722	1-249-437-11	CARBON	47K	5%	1/4W
R723	1-249-417-11	CARBON	1K	5%	1/4W
R724	1-249-417-11	CARBON	1K	5%	1/4W
R725	1-249-417-11	CARBON	1K	5%	1/4W
R726	1-249-424-11	CARBON	3.9K	5%	1/4W
R728	1-249-410-11	CARBON	270	5%	1/4W
R729	1-249-410-11	CARBON	270	5%	1/4W
R730	1-249-410-11	CARBON	270	5%	1/4W
R731	1-249-410-11	CARBON	270	5%	1/4W
R732	1-249-413-11	CARBON	470	5%	1/4W
R733	1-249-410-11	CARBON	270	5%	1/4W
R734	1-249-429-11	CARBON	10K	5%	1/4W
R735	1-249-417-11	CARBON	1K	5%	1/4W
R736	1-247-903-00	CARBON	1M	5%	1/4W
R740	1-247-903-00	CARBON	1M	5%	1/4W
R741	1-249-437-11	CARBON	47K	5%	1/4W
R742	1-249-437-11	CARBON	47K	5%	1/4W
R743	1-249-437-11	CARBON	47K	5%	1/4W
R751	1-249-422-11	CARBON	2.7K	5%	1/4W
R752	1-249-424-11	CARBON	3.9K	5%	1/4W
R753	1-249-428-11	CARBON	8.2K	5%	1/4W
R754	1-249-422-11	CARBON	2.7K	5%	1/4W
R755	1-249-424-11	CARBON	3.9K	5%	1/4W
R756	1-249-428-11	CARBON	8.2K	5%	1/4W

Ref.No.	Part No.	Description
RV301	1-228-994-00	RES, ADJ, CARBON 10K
RV302	1-228-994-00	RES, ADJ, CARBON 10K
RV401	1-228-994-00	RES, ADJ, CARBON 10K
RV402	1-228-994-00	RES, ADJ, CARBON 10K
RV601	1-228-997-00	RES, ADJ, CARBON 100K
RV602	1-228-997-00	RES, ADJ, CARBON 100K
RY101	1-515-614-11	RELAY
S11	1-570-771-11	SWITCH (HALF DET)
S301	1-570-157-21	SWITCH, SLIDE (DOLBY NR)
S601	1-554-798-31	SWITCH, SLIDE (ISS)
S602	1-571-486-11	SWITCH, MICRO (ERASE PROOF/TAPE SELECT)
S603	*1-571-487-11	SWITCH, MICRO (TAPE SELECT)
S604	*1-571-487-11	SWITCH, MICRO (ERASE PROOF)
S701	1-570-157-21	SWITCH, SLIDE (DIRECTION MODE)
S703	1-571-300-11	SWITCH, ROTARY (LOADING)
S751	1-553-856-00	SWITCH, KEY BOARD (PAUSE)
S752	1-553-856-00	SWITCH, KEY BOARD (FWD)
S753	1-553-856-00	SWITCH, KEY BOARD (REV)
S754	1-553-856-00	SWITCH, KEY BOARD (REC MUTE)
S755	1-553-856-00	SWITCH, KEY BOARD (STOP)
S756	1-553-856-00	SWITCH, KEY BOARD (REW)
S757	1-553-856-00	SWITCH, KEY BOARD (FF)
S758	1-553-856-00	SWITCH, KEY BOARD (REC)
S759	1-553-856-00	SWITCH, KEY BOARD (OPEN/CLOSE)
S760	1-553-856-00	SWITCH, KEY BOARD (AMS)
X701	1-567-771-11	VIBRATOR, CERAMIC
X702	1-567-772-11	VIBRATOR, CERAMIC

TA-909

SERVICE MANUAL

UK Model
West Germany Model
E Model



- TA-909 is the INTEGRATED STEREO AMPLIFIER in FH-909CD/909R.

SPECIFICATIONS

Continuous RMS power output (UK, West Germany model)
45 + 45 W
(6 ohms, at 1 kHz, 5% THD)
Peak music power output (E, Saudi Arabia model)
380 W (6 ohms)

Inputs

Input jacks	Jack type	Sensitivity	Impedance
PHONO	Phono	2.5 mV	50 kohms
CD/AUX	Phono	450 mV	50 kohms
MIC	Stereo mini	1 mV	600 ohms

Outputs

HEADPHONES (stereo phone jack)	Accepts headphones of 8 ohms or more
SPEAKER	Accepts speakers of 6 to 16 ohms

General

Power requirements
West Germany model:
220V AC (240 V AC, adjustable by authorized Sony personnel), 50 Hz
UK model:
240 V AC (220 V AC, adjustable by authorized Sony personnel), 50 Hz
E, Saudi Arabia model:
120, 220 or 240 V AC, adjustable, 50/60 Hz

Power consumption
West Germany model: 110 W
UK model: 220 W
E, Saudi Arabia model: 110 W

Dimensions	Approx. 220 × 120 × 280 mm (w/h/d) ($8\frac{3}{4} \times 4\frac{3}{4} \times 11\frac{1}{4}$ inches) incl. projecting parts and controls
Weight	Approx. 4.5 kg (10 lb) net

MICROFILM

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Model Identification 2

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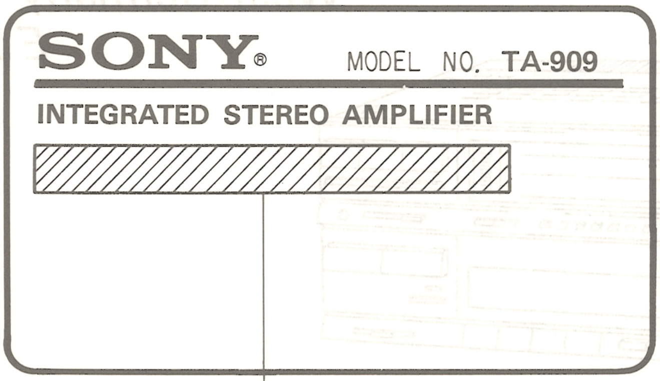
4. ELECTRICAL PARTS LIST 21

INTEGRATED STEREO AMPLIFIER

SONY®

MODEL IDENTIFICATION

— Specification Label —



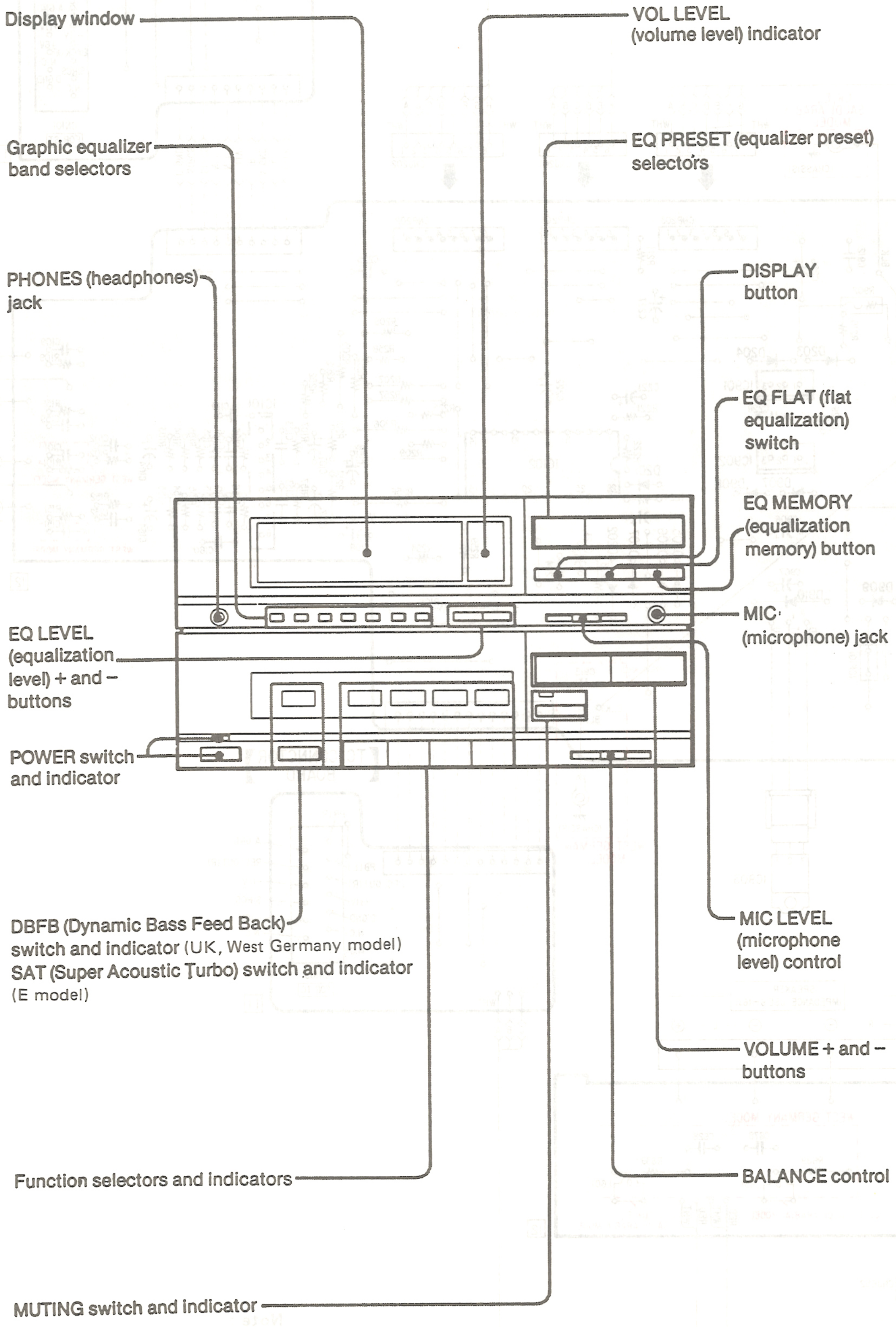
UK model: AC: 240 V ~ 50 Hz 220 W
West Germany model: AC: 220 V ~ 50 Hz 110 W
E, Saudi Arabia model: AC: 120/220/240 V ~ 50/60 Hz 110 W

SAFETY-RELATED COMPONENT WARNING!!

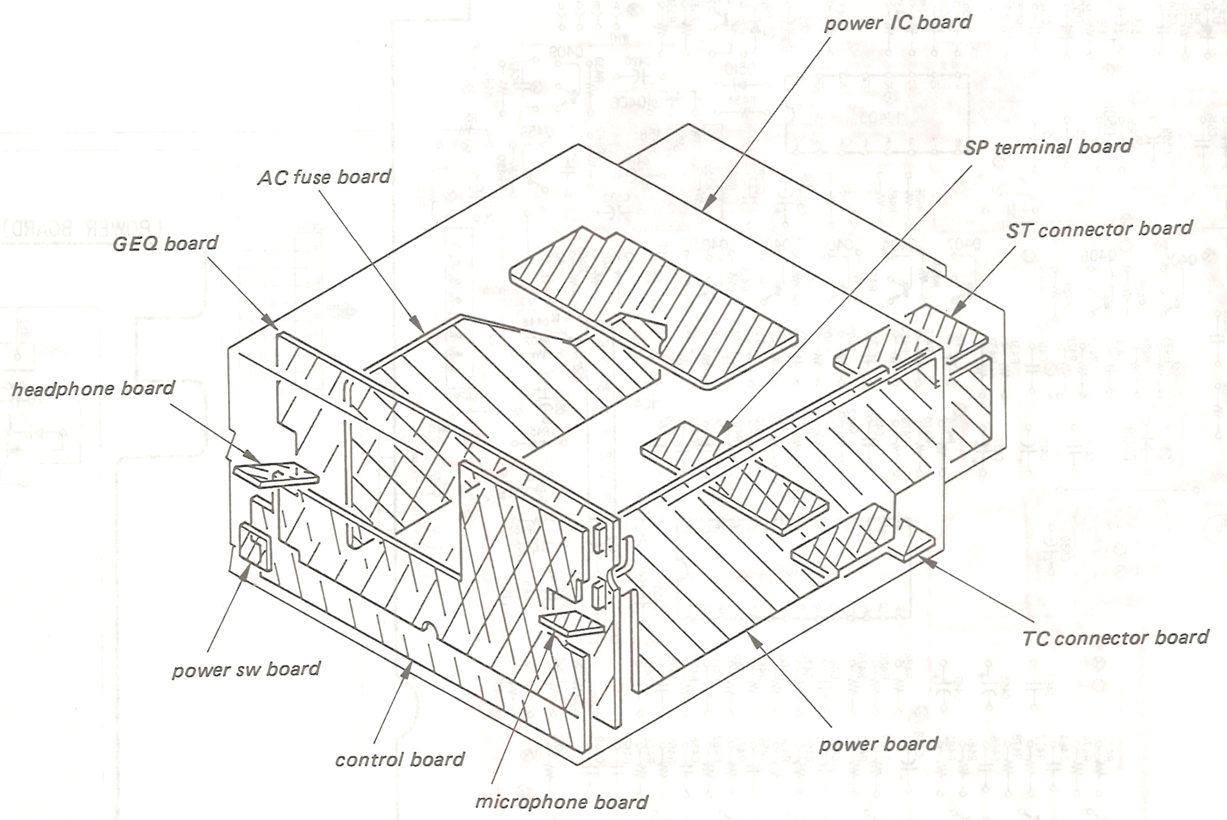
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
GENERA

1-1. LOCATION AND FUNCTION OF CONTROLS


Display window
VOL LEVEL (volume level) indicator
Graphic equalizer band selectors
EQ PRESET (equalizer preset) selectors
PHONES (headphones) jack
DISPLAY button
EQ FLAT (flat equalization) switch
EQ MEMORY (equalization memory) button
EQ LEVEL (equalization level) + and – buttons
MIC (microphone) jack
POWER switch and indicator
DBFB (Dynamic Bass Feed Back) switch and indicator (UK, West Germany model)
SAT (Super Acoustic Turbo) switch and indicator (E model)
MIC LEVEL (microphone level) control
VOLUME + and – buttons
Function selectors and indicators
BALANCE control
MUTING switch and indicator

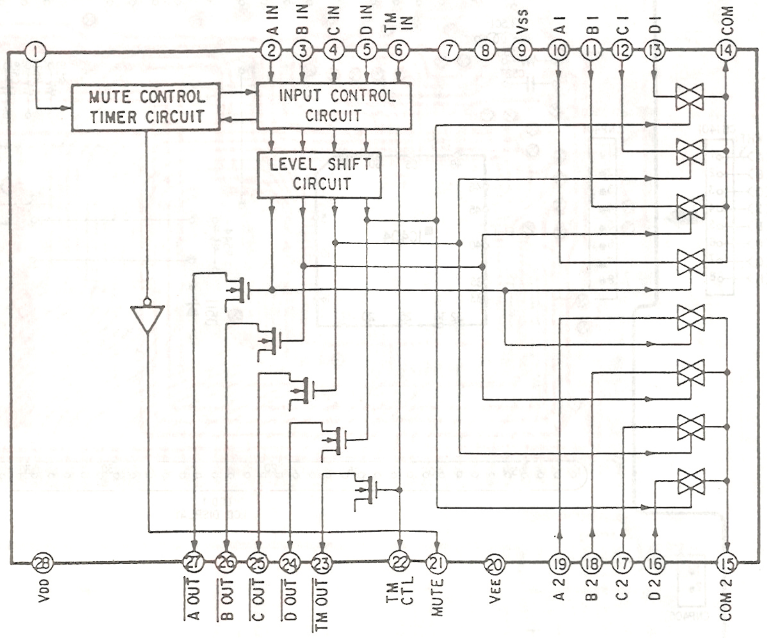
• CIRCUIT BOARDS LOCATION


power IC board
SP terminal board
AC fuse board
ST connector board
GEQ board
headphone board
TC connector board
power sw board
control board
power board
microphone board

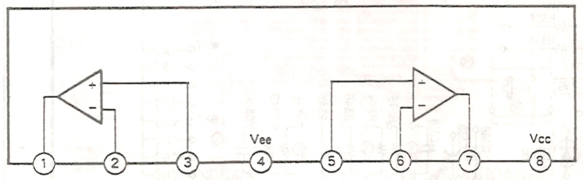
SECTION 2
DIAGRAMS

2-1. IC BLOCK DIAGRAMS

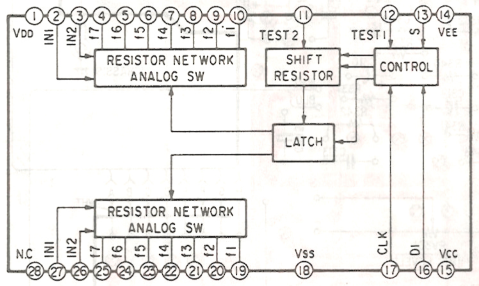
IC102 LC7815M


A IN
B IN
C IN
D IN
TM IN
Vss
A 1
B 1
C 1
D 1
COM 1
MUTE CONTROL TIMER CIRCUIT
INPUT CONTROL CIRCUIT
LEVEL SHIFT CIRCUIT
1
2
3
4
5
6
7
8
9
10
11
12
13
14
28
27
26
25
24
23
22
21
20
19
18
17
16
15
VDD
A OUT
B OUT
C OUT
D OUT
TM OUT
TM CTL
MUTE
VEE
A 2
B 2
C 2
D 2
COM 2

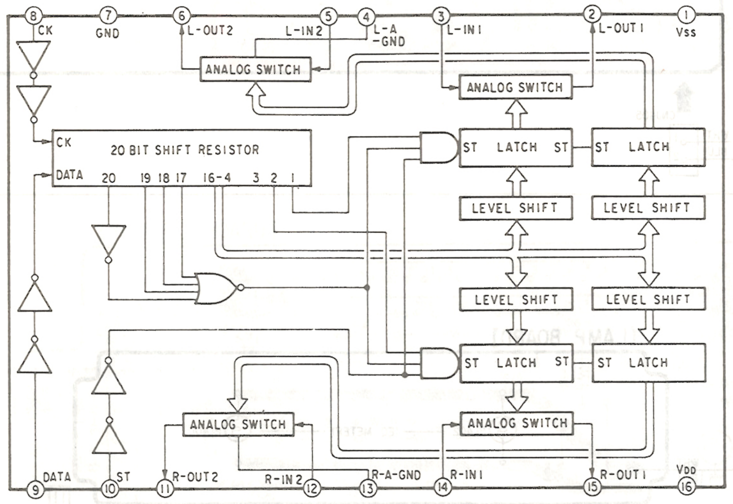
IC302, 401, 601 M5218L


1
2
3
4
Vee
5
6
7
8
Vcc

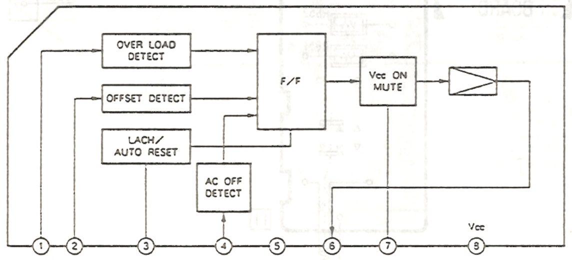
IC402 LC7522


1
2
3
4
5
6
7
8
9
10
11
12
13
14
VDD
IN1
IN2
f7
f6
f5
f4
f3
f2
f1
TEST 2
TEST 1
S
VEE
RESISTOR NETWORK ANALOG SW
SHIFT RESISTOR
CONTROL
LATCH
RESISTOR NETWORK ANALOG SW
N.C
IN1
IN2
f7
f6
f5
f4
f3
f2
f1
Vss
CLK
DI
Vcc
28
27
26
25
24
23
22
21
20
19
18
17
16
15

IC405 TC9176P

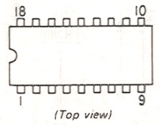

8
CK
7
GND
6
L-OUT2
5
L-IN2
4
L-A -GND
3
L-IN1
2
L-OUT1
1
Vss
ANALOG SWITCH
ANALOG SWITCH
CK
20 BIT SHIFT RESISTOR
DATA
20
19 18 17
16-4
3 2 1
ST LATCH ST
ST LATCH
LEVEL SHIFT
LEVEL SHIFT
LEVEL SHIFT
LEVEL SHIFT
ST LATCH ST
ST LATCH
ANALOG SWITCH
ANALOG SWITCH
DATA
9
ST
10
R-OUT2
11
R-IN2
12
R-A-GND
13
R-IN1
14
R-OUT1
15
VDD
16

IC701 µPC1237HA

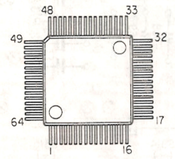

OVER LOAD DETECT
OFFSET DETECT
LACH/ AUTO RESET
AC OFF DETECT
F/F
Vcc ON MUTE
Vcc
1
2
3
4
5
6
7
8

- **Semiconductor Lead Layouts**

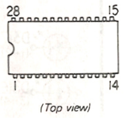
LC6528C-3649


18
10
1
9
(Top view)

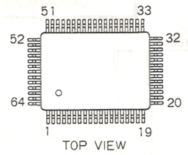
LC7060AN


48
33
49
32
64
17
1
16

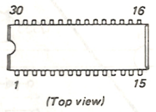
LC7522
LC7815H


28
15
1
14
(Top view)

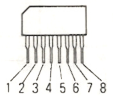
LC7560B


51
33
52
32
64
20
1
19
TOP VIEW

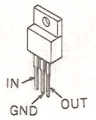
M50765-440SP


30
16
1
15
(Top view)

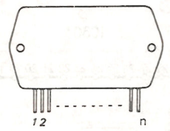
M5218L
µPC1237HA



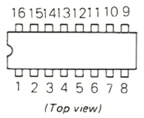
M5F7806
M5F7810
M5F7910



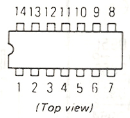
STK4152II



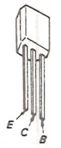
TC9176P


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

µPC4574C


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

2SA1115
2SC634SP



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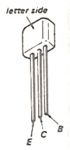
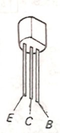
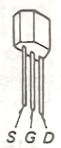
BN1A4M


letter side
E
C
B

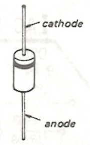
2SB1013
2SC1841-PA



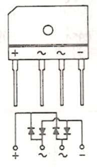
2SK381-E



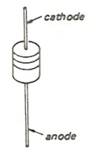
10E2
US1060M
UZL6M2


cathode
anode

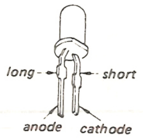
RBV-602-01



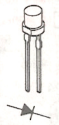
RD4.7ES-B


cathode
anode

SEL2210S-C
SEL2910A


long
short
anode
cathode

SEL2413E
SEL2913K-C

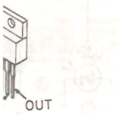


- **Semiconductor L**

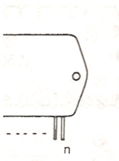
Ref. No.	Location
D201	E-28
D202	E-28
D203	D-27
D204	D-27
D205	E-28
D206	E-28
D207	E-28
D301	C-5
D303	D-2
D304	D-4
D305	F-10
D306	E-9
D307	D-4
D308	C-6
D309	F-8
D310	F-10
D311	F-9
D313	F-7
D314	F-7
D315	F-7
D316	E-7
D317	E-7
D318	B-8
D319	C-4
D320	B-5
D321	B-6
D322	B-7
D323	C-5
D324	B-3
D325	C-9
D501	B-18
D502	A-18
D503	A-17
D504	A-16
D505	A-15
D506	A-14
D507	A-14
D508	A-20
D509	D-17
D510	B-20
D511	C-15
D601	H-21
D701	I-17
D901	D-24
D902	D-25
D903	D-26
D904	D-26
D905	D-26
D906	E-26
D907	E-27
D908	E-27
D909	F-26
D910	F-27
D951	G-5
D952	G-5
D953	G-5
D954	G-5
D955	G-3
D956	G-4
D957	F-4
D958	I-2, I-7
D959	H-3
D960	G-2
D961	H-3
D962	F-5

ts

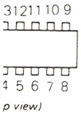
F7806
F7810
F7910



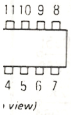
152II



176P



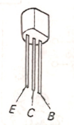
574C



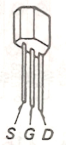
115
34SP

175
A4M

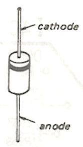
2SB1013
2SC1841-PA



2SK381-E



10E2
US1060M
UZL6M2



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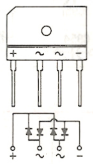
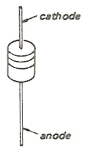
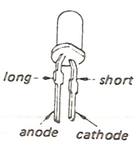


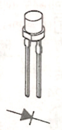
RD4.7ES-B



SEL2210S-C
SEL2910A



SEL2413E
SEL2913K-C



- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D201	E-28	IC101	D-30
D202	E-28	IC102	E-29
D203	D-27	IC301	C-3
D204	D-27	IC302	C-10
D205	E-28	IC303	D-6
D206	E-28	IC401	D-21
D207	E-28	IC402	E-20
D301	C-5	IC403	C-16
D303	D-2	IC404	C-14
D304	D-4	IC405	B-19
D305	F-10	IC601	I-21
D306	E-9	IC602	H-19
D307	D-4	IC701	H-17
D308	C-6	IC901	D-27
D309	F-8	IC902	E-27
D310	F-10	IC903	H-27
D311	F-9	IC951	F-5
D313	F-7	IC952	F-5
D314	F-7		
D315	F-7	Q301	F-7
D316	E-7	Q302	F-7
D317	E-7	Q303	F-7
D318	B-8	Q304	E-7
D319	C-4	Q305	E-7
D320	B-5	Q306	C-7
D321	B-6	Q307	F-10
D322	B-7	Q308	D-8
D323	C-5	Q401	C-19
D324	B-3	Q402	C-20
D325	C-9	Q403	C-20
D501	B-18	Q404	C-19
D502	A-18	Q405	C-17
D503	A-17	Q406	C-18
D504	A-16	Q407	C-19
D505	A-15	Q408	B-20
D506	A-14	Q409	B-21
D507	A-14	Q410	A-20
D508	A-20	Q451	F-20
D509	D-17	Q452	F-20
D510	B-20	Q453	F-20
D511	C-15	Q454	F-19
D601	H-21	Q455	F-18
D701	I-17	Q456	F-18
D901	D-24	Q457	F-19
D902	D-25	Q458	B-20
D903	D-26	Q459	B-21
D904	D-26	Q601	J-20
D905	D-26	Q651	I-20
D906	E-26	Q701	I-17
D907	E-27	Q702	H-17
D908	E-27	Q751	I-17
D909	F-26	Q951	G-4
D910	F-27	Q952	F-4
D951	G-5	Q953	H-2, H-7
D952	G-5	Q954	G-4
D953	G-5		
D954	G-5		
D955	G-3		
D956	G-4		
D957	F-4		
D958	I-2, I-7		
D959	H-3		
D960	G-2		
D961	H-3		
D962	F-5		

2-2. PRINTED WIRING BOARDS

— Conductor Side —

- See page 7 for Semiconductor Location.
- See page 6 for Semiconductor Lead Layouts.

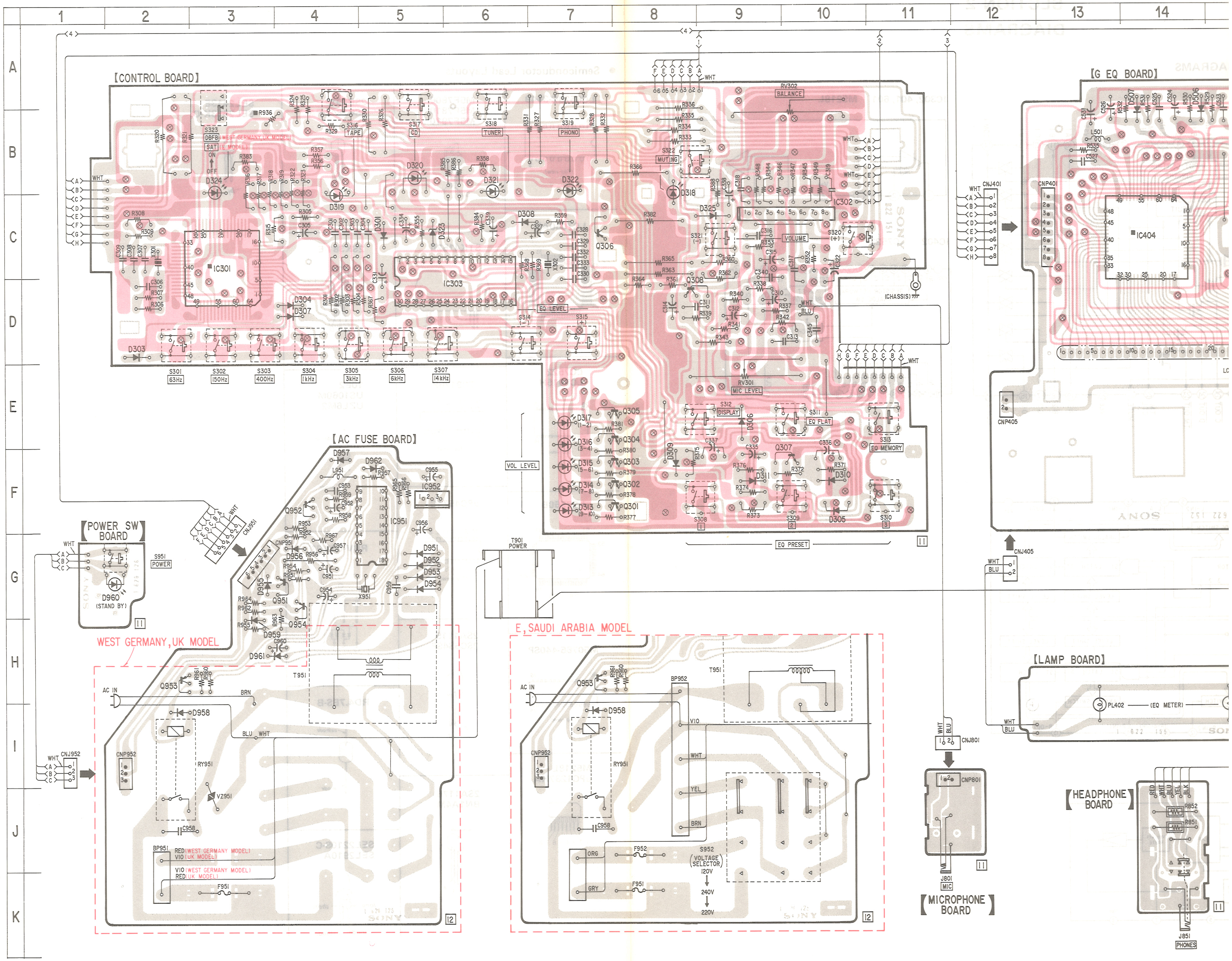
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF : μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ━━ : B+ Line.
- ━ ━ ━ : B− Line.
- AC voltage readings in the bias oscillator with a VTVM.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- Voltage are taken with a VOM (50 kΩ/V). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇒ : PHONO

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- Switch

Ref. No.	Switch	Position
S301	63 Hz	OFF
S302	150 Hz	OFF
S303	400 Hz	OFF
S304	1 kHz	OFF
S305	3 kHz	OFF
S306	6 kHz	OFF
S307	14 kHz	OFF
S308	EQ PRESET/1	OFF
S309	EQ PRESET/2	OFF
S310	EQ PRESET/3	OFF
S311	EQ FLAT	OFF
S312	DISPLAY	OFF
S313	EQ MEMORY	OFF
S314	EQ LEVEL/−	OFF
S315	EQ LEVEL/+	OFF
S316	TAPE	OFF
S317	CD	OFF
S318	TUNER	OFF
S319	PHONO	OFF
S320	VOLUME/+	OFF
S321	VOLUME/−	OFF
S322	MUTING	OFF
S323	DBFB (UK, West Germany model)	OFF
	SAT (E, Saudi Arabia model)	OFF
S951	POWER	OFF
S952	VOLTAGE SELECTOR (E, Saudi Arabia model)	OFF



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A
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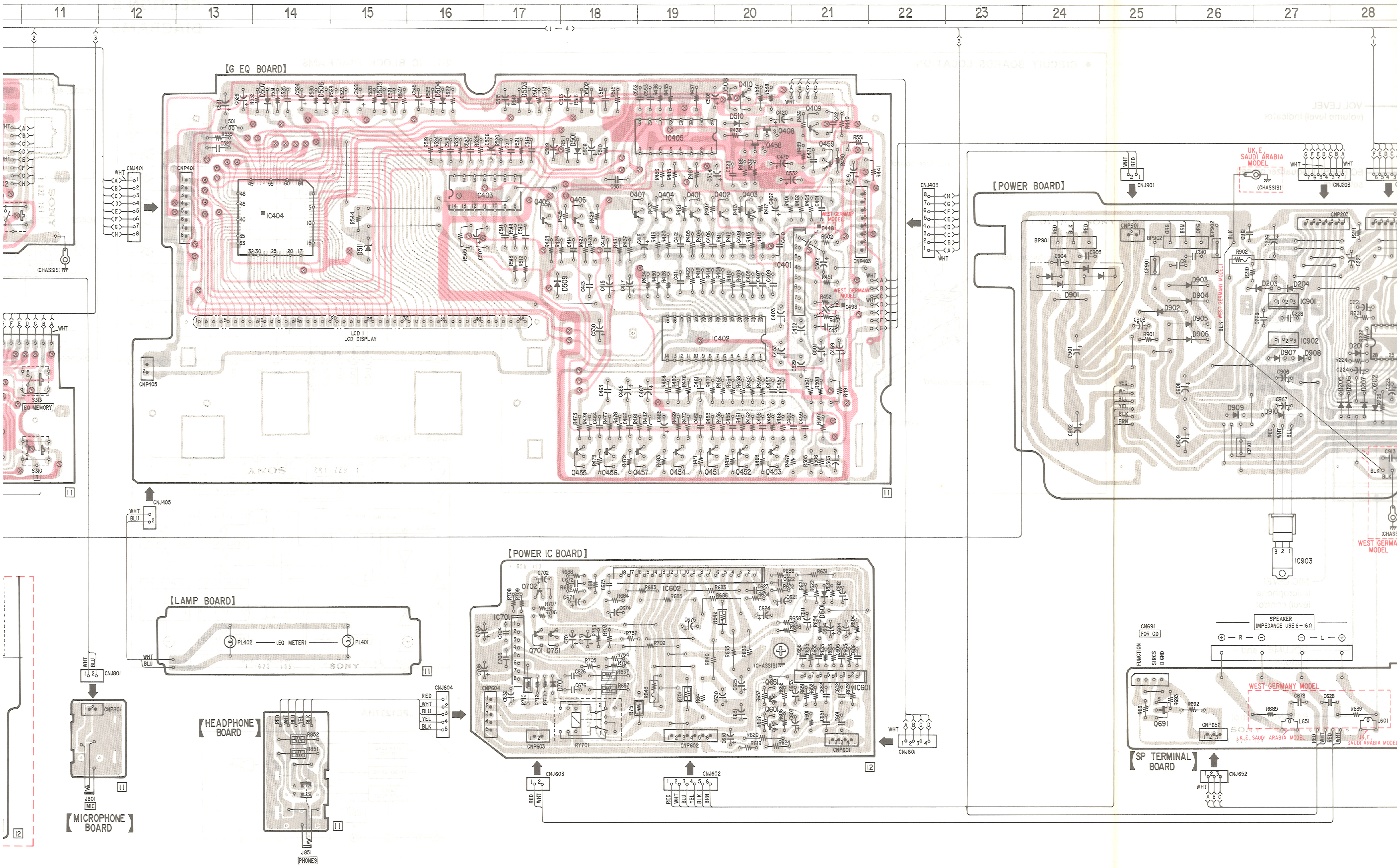
C
D
E
F
G
H
I
J
K
[CONTROL BOARD]
[G EQ BOARD]
[AC FUSE BOARD]
[POWER SW BOARD]
[LAMP BOARD]
[HEADPHONE BOARD]
[MICROPHONE BOARD]
WEST GERMANY, UK MODEL
E, SAUDI ARABIA MODEL
IC301
IC302
IC303
IC404
IC951
IC952
RV301 MIC LEVEL
RV302 BALANCE
VOL LEVEL
EQ PRESET
VOLUME
EQ LEVEL
S301 63Hz
S302 150Hz
S303 400Hz
S304 1kHz
S305 3kHz
S306 6kHz
S307 14kHz
S316 TAPE
S317 CD
S318 TUNER
S319 PHONO
S322 MUTING
S323 DBFB SAT
S312 DISPLAY
S311 EQ FLAT
S313 EQ MEMORY
S951 POWER
D960 (STAND BY)
T901 POWER
T951
RY951
F951
F952
S952 (VOLTAGE SELECTOR) 120V 240V 220V
AC IN
PL402 (EQ METER)
J801 MIC
J851 PHONES
(CHASSIS)
CNJ401
CNP401
CNJ405
CNP405
CNJ801
CNP801
CNJ951
CNP951
CNJ952
CNP952


11
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24
25
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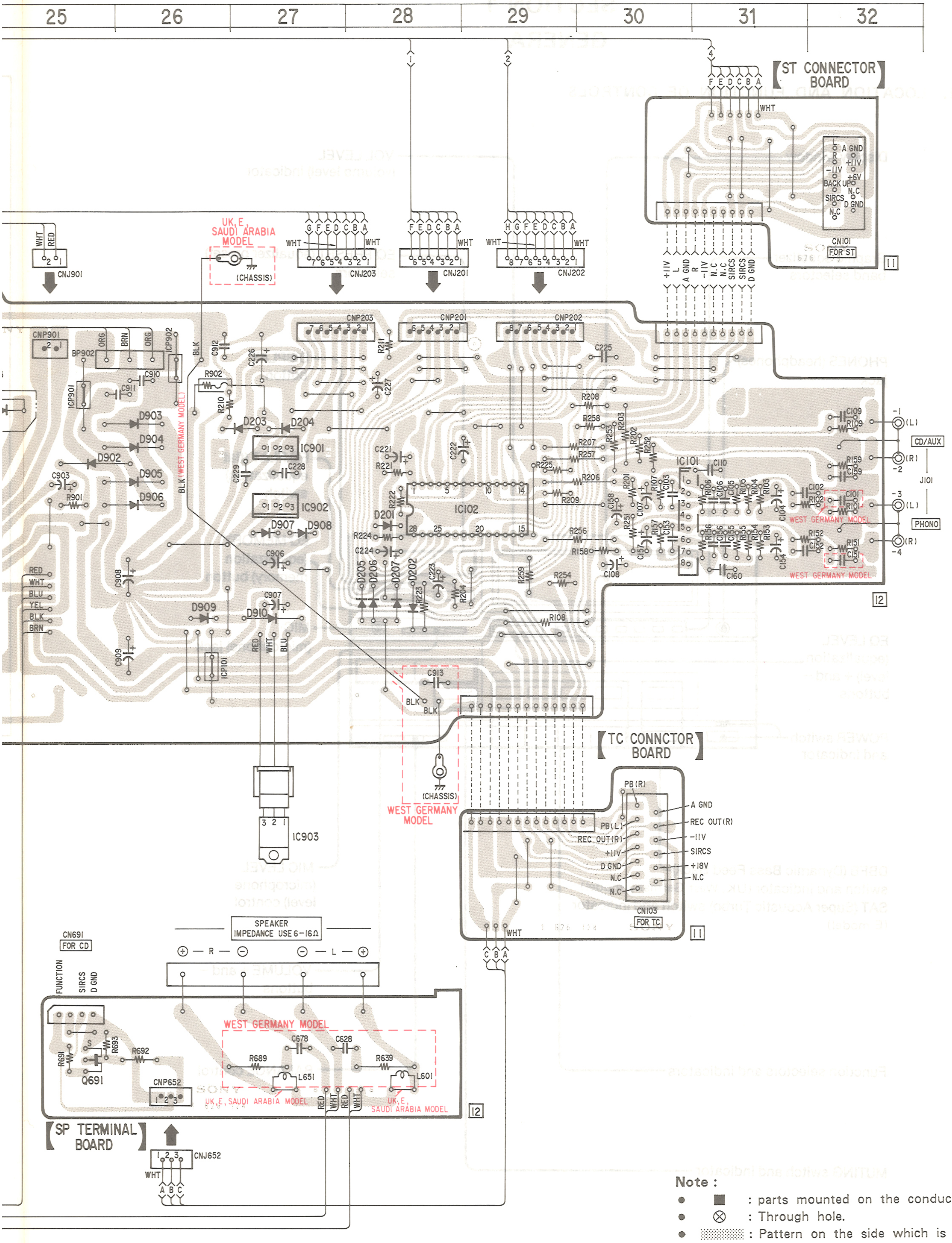
27
28
[G EQ BOARD]
IC404
IC403
IC405
IC401
IC402
LCD 1
LCD DISPLAY
CNJ401
CNP401
CNP403
CNJ403
CNP405
CNJ405
WEST GERMANY MODEL
S313
EQ MEMORY
S310
(CHASSIS)
SONY
[POWER BOARD]
CNJ901
CNJ203
CNP203
CNP901
IC901
IC902
IC903
UK, E, SAUDI ARABIA MODEL
WEST GERMANY MODEL
[LAMP BOARD]
PL402
(EQ METER)
PL401
[POWER IC BOARD]
IC602
IC701
IC601
RY701
CNP604
CNJ604
CNP603
CNJ603
CNP602
CNJ602
CNP601
CNJ601
[HEADPHONE BOARD]
J851
PHONES
[MICROPHONE BOARD]
CNP801
CNJ801
J801
MIC
[SP TERMINAL BOARD]
CNJ652
CNP652
CN691
FOR CD
SPEAKER
IMPEDANCE USE 6-16Ω
WEST GERMANY MODEL
UK, E, SAUDI ARABIA MODEL

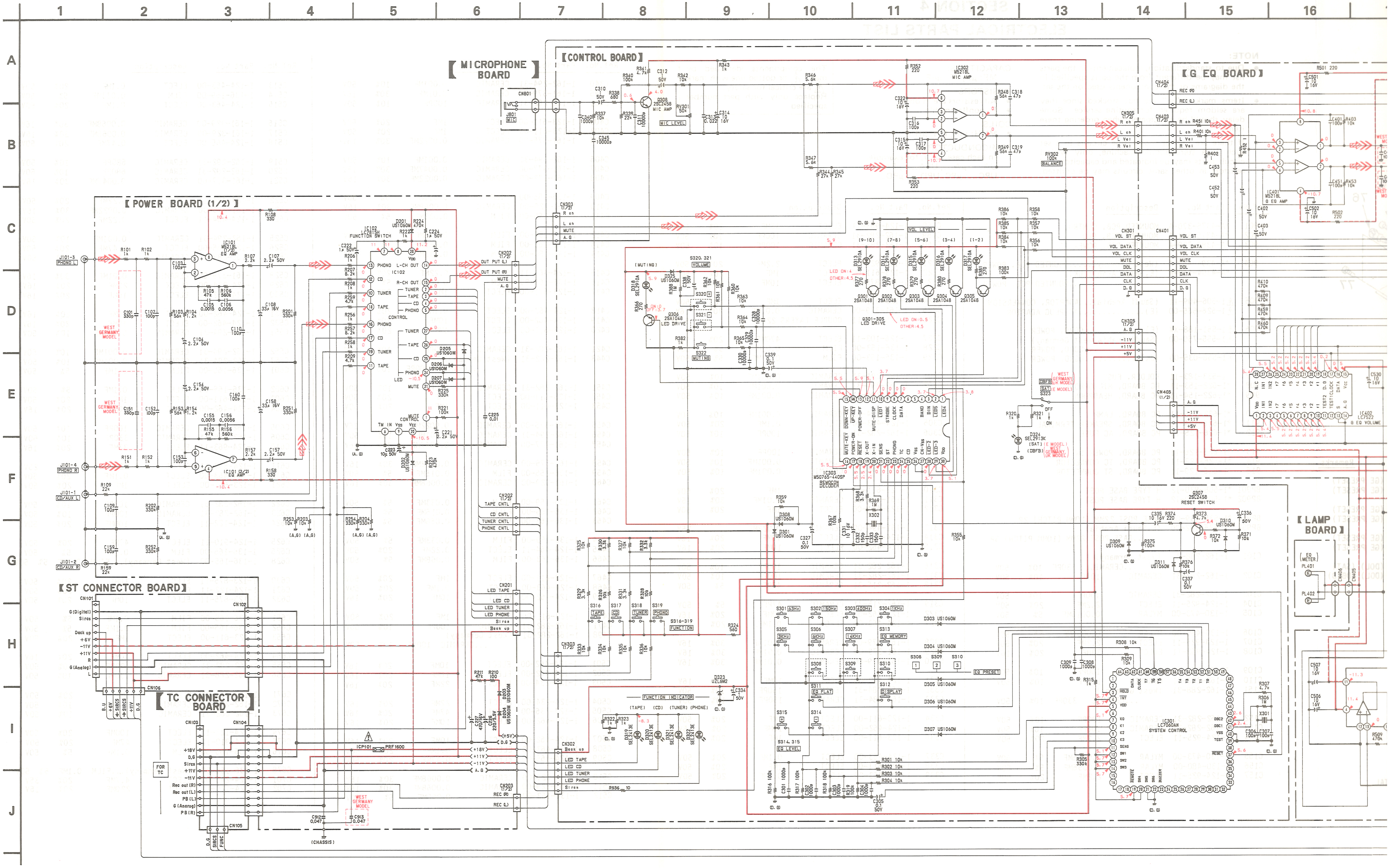

25
26
27
28
29
30
31
32
ST CONNECTOR BOARD
CN101 FOR ST
A GND
+11V
-11V
+6V
BACK UP
N.C
SIRCS
D GND
TC CONNCTOR BOARD
CN103 FOR TC
PB(R)
PB(L)
REC OUT(R)
+11V
D GND
N.C
A GND
-11V
SIRCS
+18V
SP TERMINAL BOARD
CN691 FOR CD
FUNCTION
SIRCS
D GND
SPEAKER IMPEDANCE USE 6−16Ω
CNJ901
CNJ203
CNJ201
CNJ202
CNP901
CNP203
CNP201
CNP202
CNP652
CNJ652
UK, E, SAUDI ARABIA MODEL
WEST GERMANY MODEL
(CHASSIS)
IC101
IC102
IC901
IC902
IC903
IC101
CD/AUX
PHONO
J101
ICP901
ICP902
ICP101
BP902
Q691
L601
L651
WHT
RED
BLU
YEL
BLK
BRN
ORG

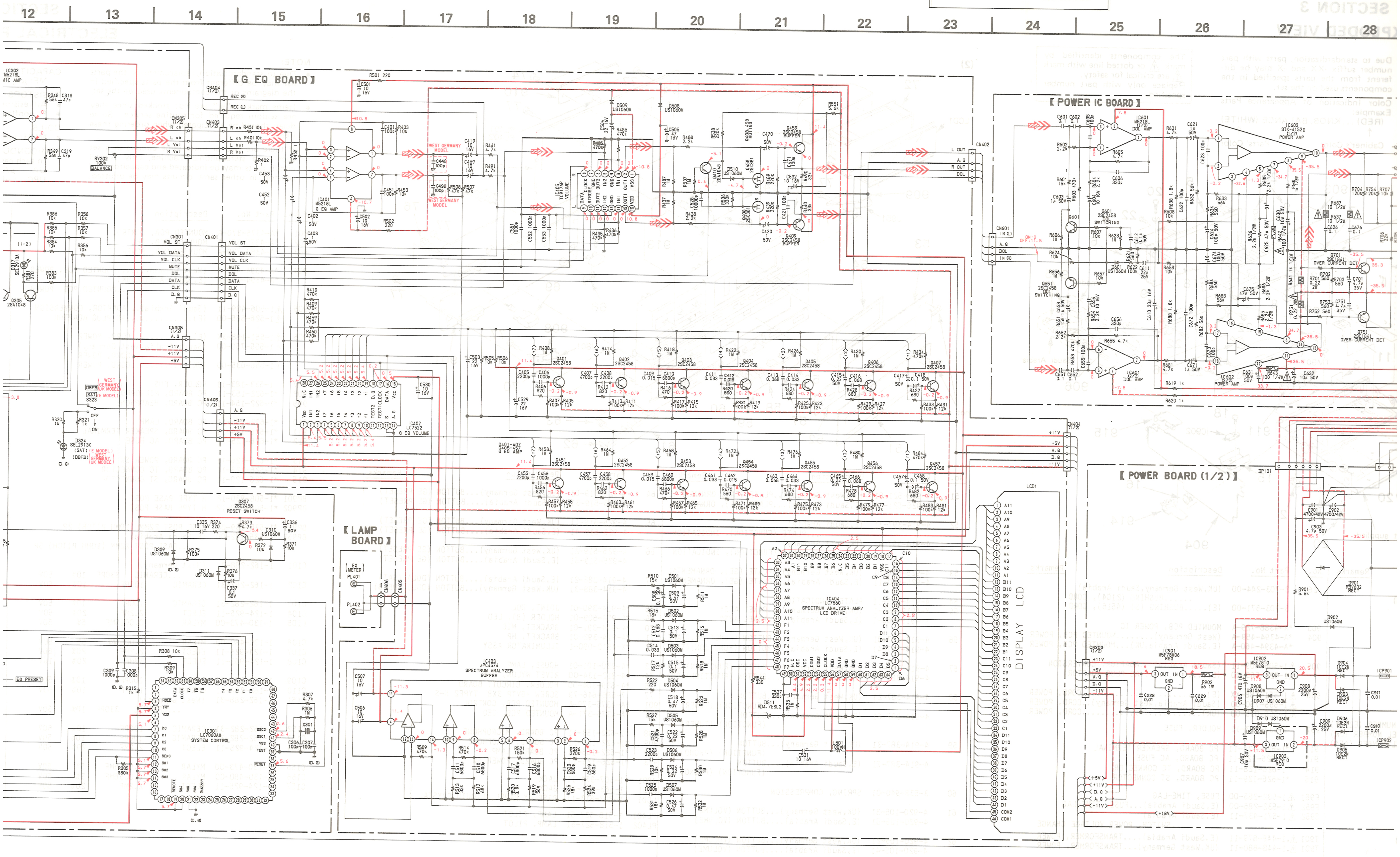
Note :

- ■ : parts mounted on the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern on the side which is seen.
- ▨ : Pattern of the rear side.

2-3. SCHEMATIC DIAGRAM

• See page 8 for notes.


MICROPHONE BOARD
CONTROL BOARD
POWER BOARD (1/2)
ST CONNECTOR BOARD
TC CONNECTOR BOARD
G EQ BOARD
LAMP BOARD
IC101 M5218L EQ AMP
IC102 LC7815H FUNCTION SWITCH
IC302 M5218L MIC AMP
IC303 M50765-440SP REMOCON DECODER
IC301 LC7060AN SYSTEM CONTROL
IC401 M5218L G EQ AMP
IC402 LC7522 G EQ VOLUME
WEST GERMANY MODEL
FOR TC
(CHASSIS)


12
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18
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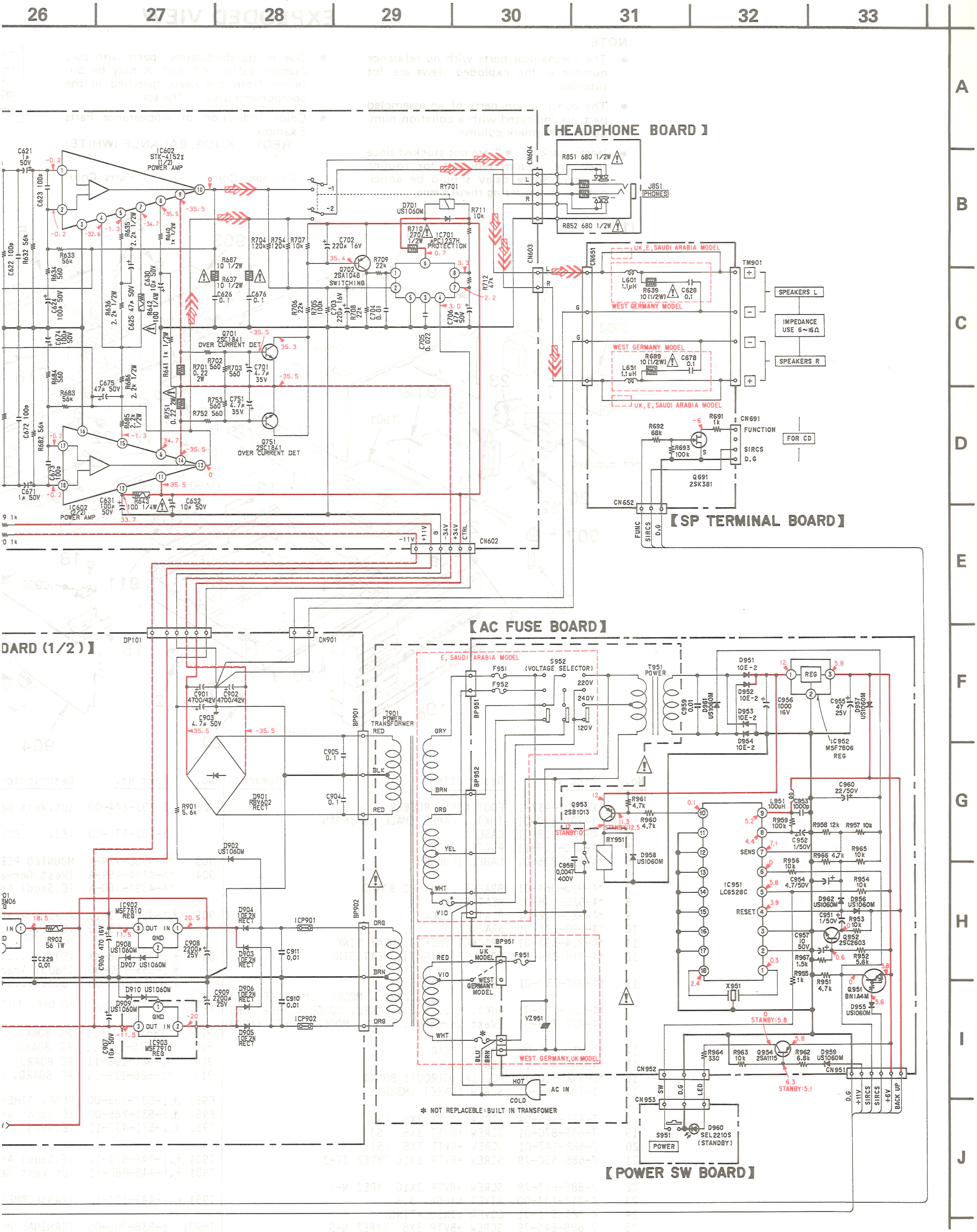
21
22
23
24
25
26
27
28
【G EQ BOARD】
【POWER IC BOARD】
【LAMP BOARD】
【POWER BOARD (1/2)】
IC302 M5218L MIC AMP
IC401 M5218L G EQ AMP
IC405 LC7533 VOLUME
IC402 LC7522 G EQ VOLUME
IC403 APC4574 SPECTRUM ANALYZER BUFFER
IC404 LC7560 SPECTRUM ANALYZER AMP/LCD DRIVE
IC301 LC7060AN SYSTEM CONTROL
IC601 M5218L DOL AMP
IC602 STK-4152Ⅱ POWER AMP
IC901 M5F78M06 REG
IC902 M5F7810 REG
IC903 M5F7910 REG
Q409 2SC2458 BUFFER
Q459 2SC2458 BUFFER
Q401-407 Q451-457 G EQ AMP
Q307 2SC2458 RESET SWITCH
Q601 2SC2458 SWITCHING
Q651 2SC2458 SWITCHING
Q701 2SC1841 OVER CURRENT DET
Q751 2SC1841 OVER CURRENT DET
D901 RBV602 RECT
RV302 100k BALANCE
WEST GERMANY MODEL
LCD1
DISPLAY LCD
X301
EQ METER
EQ PRESET
CN301
CN305
CN401
CN402
CN403
CN404
CN405
CN406
CN601
CN903
DP101
L OUT
A.G
R OUT
DOL
VOL ST
VOL DATA
VOL CLK
MUTE
DATA
CLK
D.G
+11V
+5V
-11V
+18V


26
27
28
29
30
31
32
33
A
B
C
D
E
F
G
H
I
J
【HEADPHONE BOARD】
【SP TERMINAL BOARD】
【AC FUSE BOARD】
【POWER SW BOARD】
DARD (1/2)】
IC602 STK-4152Ⅱ (1/2) POWER AMP
IC602 (2/2) POWER AMP
RY701
D701 US1060M
IC701 μPC1237H PROTECTION
Q702 2SA1048 SWITCHING
Q701 2SC1841 OVER CURRENT DET
Q751 2SC1841 OVER CURRENT DET
CN602
CN603
CN604
CN651
CN652
CN691
J851 PHONES
R851 680 1/2W
R852 680 1/2W
TM901
SPEAKERS L
SPEAKERS R
IMPEDANCE USE 6～16Ω
UK, E, SAUDI ARABIA MODEL
WEST GERMANY MODEL
L601 1.1μH
L651 1.1μH
FUNCTION
SIRCS
D.G
FOR CD
Q691 2SK381
-11V
+11V
B
-34V
+34V
CTRL
DP101
CN901
C901 4700/42V
C902 4700/42V
D901 RBV602 RECT
D902 US1060M
IC902 M5F7810 REG
IC903 M5F7910 REG
D903 10E2N RECT
D904 10E2N RECT
D905 10E2N RECT
D906 10E2N RECT
ICP901
ICP902
BP901
BP902
BP951
BP952
T901 POWER TRANSFORMER
E, SAUDI ARABIA MODEL
S952 (VOLTAGE SELECTOR)
F951
F952
220V
240V
120V
T951 POWER
D951 10E-2
D952 10E-2
D953 10E-2
D954 10E-2
IC952 M5F7806 REG
REG
Q953 2SB1013
RY951
D958 US1060M
IC951 LC6528C
SENS
RESET
X951
Q952 2SC2603
Q951 BN1A4M
D955 US1060M
D956 US1060M
D962 US1060M
Q954 2SA1115
D959 US1060M
STANBY:0
STANBY:5.8
STANBY:5.1
STANBY:12.5
UK MODEL
WEST GERMANY MODEL
WEST GERMANY, UK MODEL
VZ951
HOT
COLD
AC IN
＊ NOT REPLACEABLE: BUILT IN TRANSFORMER
CN952
CN953
CN951
SW
D.G
LED
S951 POWER
D960 SEL2210S (STANDBY)
+11V
SIRCS
+6V
BACK UP
GRY
BRN
ORG
YEL
WHT
VIO
RED
BLK
BLU

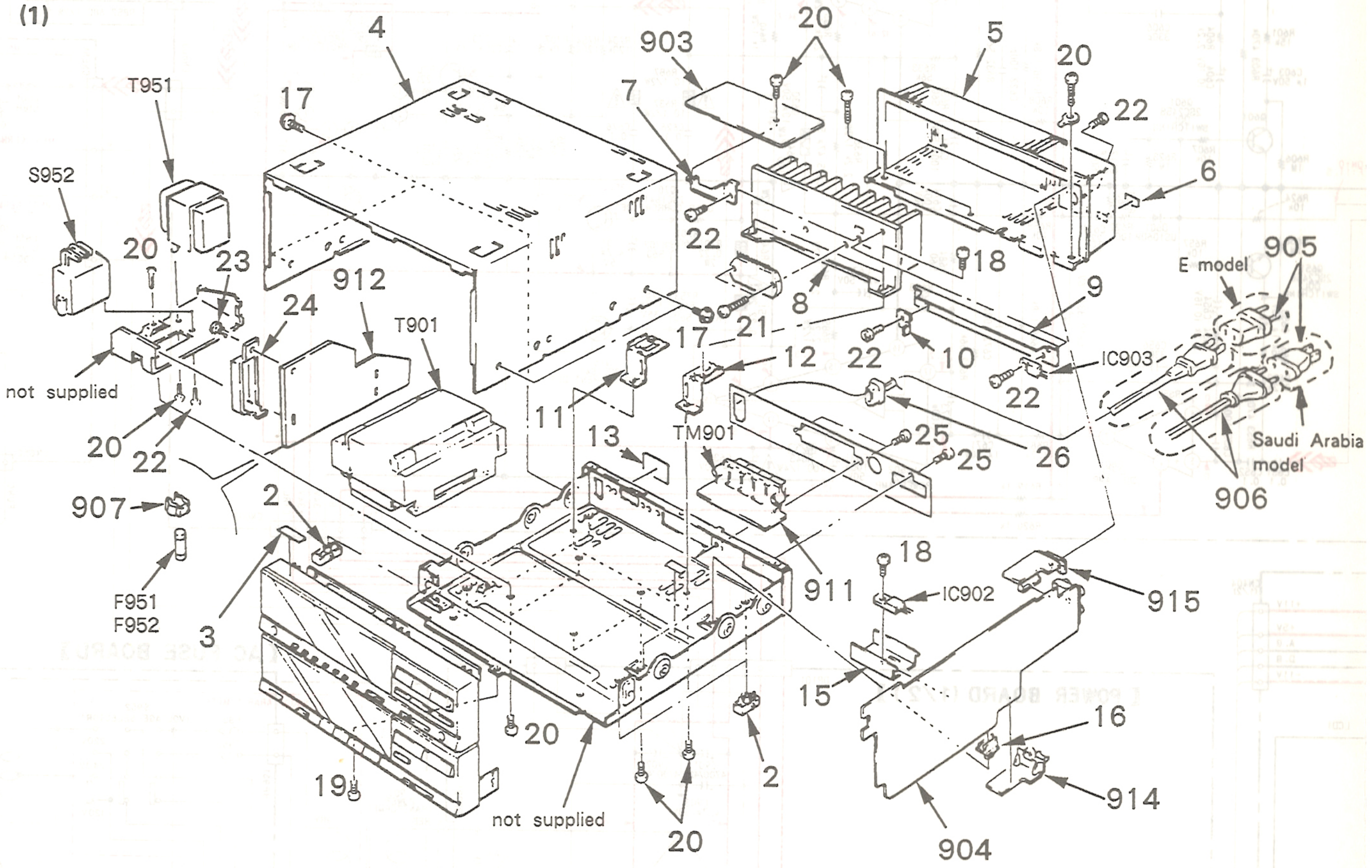
SECTION 3
EXPLODED VIEW

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color ↑ Parts' Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

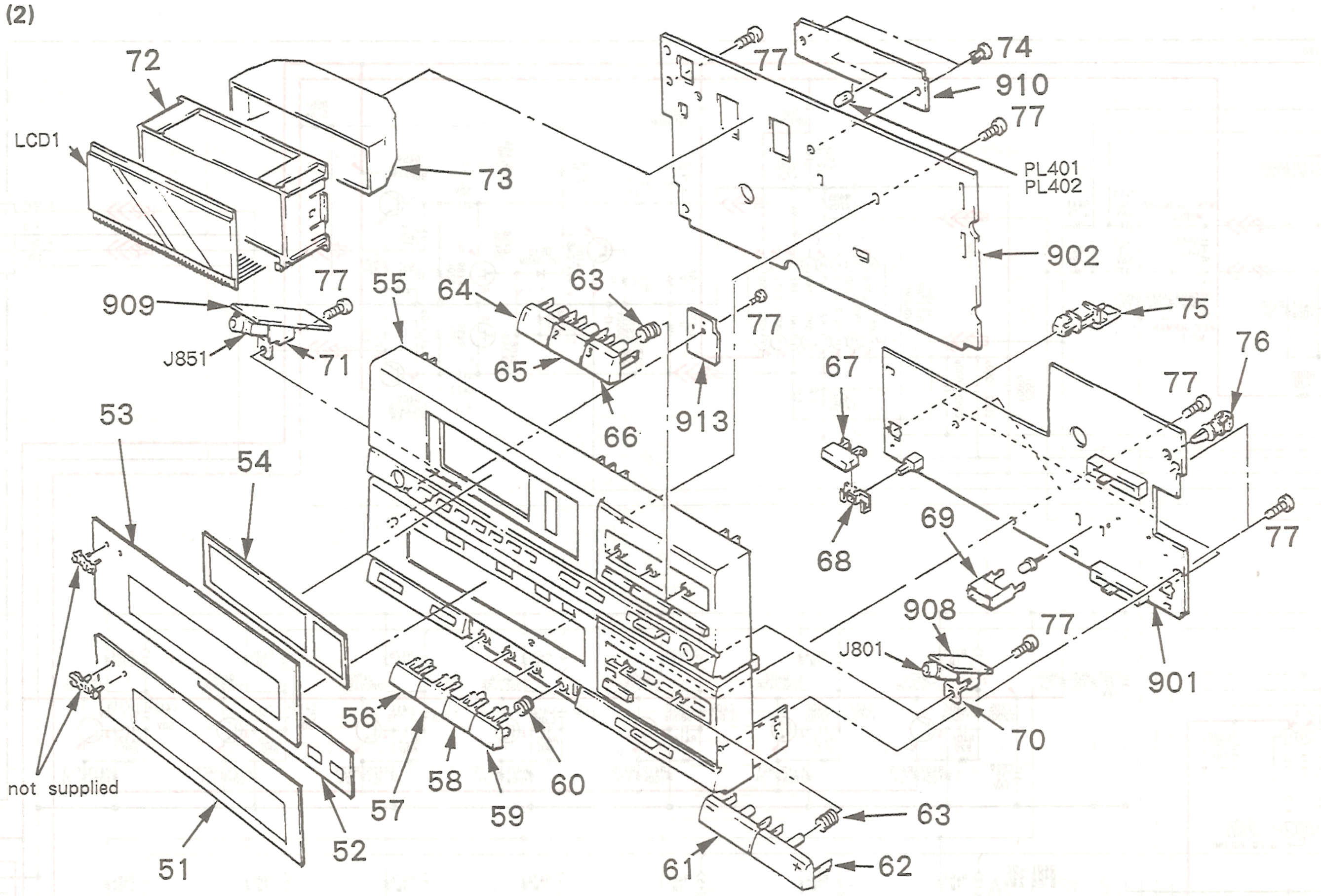
(1)



No.	Part No.	Description	Remarks
2	X-4902-937-1	FOOT ASSY, RUBBER	
3	3-701-690-01	(UK)...LABEL (MADE IN JAPAN)	
4	4-920-118-01	CASE	
5	*4-920-116-11	PLATE, JACK	
6	*4-920-876-01	LABEL (PHONO)	
7	*4-910-064-01	BRACKET (H), PC BOARD	
8	*4-920-108-01	HEAT SINK	
9	*4-920-112-01	PLATE, BLOCK	
10	*4-920-171-01	BRACKET	
11	*4-914-393-01	BRACKET (LEFT), HEAT SINK	
12	*4-914-394-01	BRACKET (RIGHT), HEAT SINK	
13	*4-922-737-01	(E,Saudi Arabia) ....LABEL, MODEL NUMBER (E2/E3)	
	*4-922-738-01	(UK).............LABEL, MODEL NUMBER (UK)	
	*4-922-739-01	(West Germany)..LABEL, MODEL NUMBER (AE4)	
14	*4-920-885-01	COVER, REAR	
15	*4-880-403-11	HEAT SINK	
16	*3-642-310-00	HOLDER, CIRCUIT BOARD	
17	3-704-366-01	SCREW (CASE) (M3X8)	
18	7-682-548-04	SCREW +BVTT 3X8 (S)	
19	7-685-870-01	SCREW +BVTT 3X5 (S)	
20	7-682-147-01	SCREW +BVTT 3X6 (S)	
21	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
22	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
23	4-812-134-00	RIVET NYLON, 3.5	
24	4-925-571-01	COVER (INSULATING)	
25	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	

No.	Part No.	Description	Remarks
26	3-703-244-00	(UK,West Germany,Saudi Arabia) ......BUSHING (2104), CORD	
	3-703-571-00	(E).....BUSHING (S) (4516), CORD	
903	*A-4388-729-A	MOUNTED PCB, POWER IC	
904	*A-4394-459-A	(West Germany)........MOUNTED PCB, POWER	
	*A-4394-460-A	(E,Saudi Arabia,UK)...MOUNTED PCB, POWER	
905	⚠1-506-409-11	(Saudi Arabia)...ADAPTOR, CONVERSION	
	⚠1-526-565-00	(E)..............AC PLUG ADAPTOR	
906	⚠1-551-188-XX	(E)..........................CORD, POWER	
	⚠1-555-750-00	(Saudi Arabia,West Germany)..CORD, POWER	
	⚠1-556-035-00	(UK).........................CORD, POWER	
907	1-533-183-11	HOLDER, FUSE	
911	*1-626-124-11	PC BOARD, SPEAKER TERMINAL	
912	*1-626-125-11	PC BOARD, AC FUSE	
914	*1-626-128-11	PC BOARD, TC CONNECTOR	
915	*1-626-129-11	PC BOARD, ST CONNECTOR	
F951	⚠1-532-285-00	FUSE, TIME-LAG	
F952	⚠1-532-285-00	(E,Saudi Arabia)...FUSE, TIME-LAG	
S952	⚠1-571-437-11	(E,Saudi Arabia) ....SWITCH, POWER VOLTAGE CHANGE	
T901	⚠.1-448-879-11	(E,Saudi Arabia)....TRANSFORMER, POWER	
T901	⚠.1-448-880-11	(UK,West Germany)...TRANSFORMER, POWER	
T951	⚠.1-449-194-11	TRANSFORMER, POWER	
TM901	1-536-705-00	TERMINAL BOARD (SP)	

(2)



No.	Part No.	Description	Remarks
51	4-925-521-01	(UK,West Germany)..PLATE (TA), ORNAMENTAL	
	4-925-521-11	(E,Saudi Arebia)...PLATE (TA), ORNAMENTAL	
52	4-914-397-31	(E,Saudi Arabia) ...PLATE (FUNCTION), INDICATION	
	4-914-397-41	(UK,West Germany) ...PLATE (FUNCTION), INDICATION	
53	4-925-520-01	(UK,West Germany)..PLATE (GE), ORNAMENTAL	
	4-925-520-11	(E,Saudi Arabia)...PLATE (GE), ORNAMENTAL	
54	4-914-395-11	PLATE, INDICATION	
55	X-4919-665-1	(UK,West Germany)...PANEL ASSY	
	X-4919-666-1	(E,Saudi Arabia)....PANEL ASSY	
56	4-914-387-01	(UK,West Germany)..BUTTON (FUNCTION)(TAPE)	
	4-914-387-41	(E,Saudi Arabia)...BUTTON (FUNCTION)(TAPE)	
57	4-914-387-11	(UK,West Germany)...BUTTON (FUNCTION)(CD)	
	4-914-387-51	(E,Saudi Arabia)....BUTTON (FUNCTION)(CD)	
58	4-914-387-21	(UK,West Germany)...BUTTON (FUNCTION) (TUNER)	
	4-914-387-61	(E,Saudi Arabia)....BUTTON (FUNCTION) (TUNER)	
59	4-914-387-31	(UK,West Germany)...BUTTON (FUNCTION) (PHONO)	
	4-914-387-71	(E,Saudi Arabia)....BUTTON (FUNCTION) (PHONO)	
60	3-538-940-01	SPRING, COMPRESSION	
61	4-920-105-31	(UK,West Germany)...BUTTON (VOLUME)	
	4-920-105-51	(E,Saudi Arabia)....BUTTON (VOLUME)	
62	4-920-105-21	(UK,West Germany)...BUTTON (VOLUME)	
	4-920-105-41	(E,Saudi Arabia)....BUTTON (VOLUME)	
63	3-564-333-21	SPRING, COMPRESSION	

No.	Part No.	Description	Remarks
64	4-925-519-01	(UK,West Germany)...BUTTON (GE PRESET)	
	4-925-519-31	(E,Saudi Arabia)....BUTTON (GE PRESET)	
65	4-925-519-11	(UK,West Germany)...BUTTON (GE PRESET)	
	4-925-519-41	(E,Saudi Arabia)....BUTTON (GE PRESET)	
66	4-925-519-21	(UK,West Germany)...BUTTON (GE PRESET)	
	4-925-519-51	(E,Saudi Arabia)....BUTTON (GE PRESET)	
67	4-914-388-21	(E,Saudi Arabia)....BUTTON (DOL) (SAT)	
	4-914-388-31	(UK,West Germany)...BUTTON (DOL) (DBFB)	
68	*4-914-390-01	JOINT, DOL	
69	*4-904-509-01	HOLDER (B), LED	
70	*4-914-391-01	BRACKET, MIC	
71	*4-914-392-01	BRACKET, HP	
72	*X-4910-090-1	ILLUMINATOR ASSY	
73	*4-920-101-01	HOUSE, LAMP	
74	4-812-134-00	RIVET NYLON, 3.5	
75	*4-839-304-00	HOLDER, CIRCUIT BOARD	
77	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
901	*A-4375-370-A	MOUNTED PCB, CONTROL	
902	*A-4375-371-A	MOUNTED PCB, GEQ	
908	*1-622-153-11	PC BOARD, MICROPHONE	
909	*1-622-154-11	PC BOARD, HEADPHONE	
910	*1-622-155-11	PC BOARD, LAMP	
913	*1-626-126-11	PC BOARD, POWER SW	
J801	1-507-974-11	JACK	
J851	1-563-951-11	JACK	
LCD1	1-807-813-11	DISPLAY PANEL, LIQUID CRYSTAL	
PL401	1-518-527-51	LAMP, PILOT	
PL402	1-518-527-51	LAMP, PILOT	

SECTION 4
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description			
901	*A-4375-370-A	MOUNTED PCB, CONTROL			
902	*A-4375-371-A	MOUNTED PCB, GEQ			
903	*A-4388-729-A	MOUNTED PCB, POWER IC			
904	*A-4394-459-A	(West Germany).....MOUNTED PCB, POWER			
	*A-4394-460-A	(E,Saudi Arabia,UK) ...MOUNTED PCB, POWER			
905	⚠1-506-409-11	(Saudi Arabia)...ADAPTOR, CONVERSION			
	⚠1-526-565-00	(E)..............AC PLUG ADAPTOR			
906	⚠1-551-188-XX	(E).............CORD, POWER			
	⚠1-555-750-00	(Saudi Arabia,West Germany) ...CORD, POWER			
	⚠1-556-035-00	(UK)............CORD, POWER			
907	1-533-183-11	HOLDER, FUSE			
908	*1-622-153-11	PC BOARD, MICROPHONE			
909	*1-622-154-11	PC BOARD, HEADPHONE			
910	*1-622-155-11	PC BOARD, LAMP			
911	*1-626-124-11	PC BOARD, SPEAKER TERMINAL			
912	*1-626-125-11	PC BOARD, AC FUSE			
913	*1-626-126-11	PC BOARD, POWER SW			
914	*1-626-128-11	PC BOARD, TC CONNECTOR			
915	*1-626-129-11	PC BOARD, ST CONNECTOR			
BP901	*1-508-830-12	H TYPE BASE POST			
BP902	*1-508-830-12	H TYPE BASE POST			
BP951	*1-535-139-00	BASE POST 22MM (10MM PITCH) 2P			
BP952	*1-535-142-00	(E,Saudi Arabia) ...BASE POST 22MM (10MM PITCH) 5P			
C101	1-162-288-31	(West Germany) ...CERAMIC	330PF	10%	50V
C102	1-162-282-31	CERAMIC	100PF	10%	50V
C103	1-162-282-31	CERAMIC	100PF	10%	50V
C104	1-124-925-11	ELECT	2.2MF	20%	50V
C105	1-130-473-00	MYLAR	0.0015MF	5%	50V
C106	1-130-480-00	MYLAR	0.0056MF	5%	50V
C107	1-124-925-11	ELECT	2.2MF	20%	50V
C108	1-124-963-11	ELECT	33MF	20%	16V
C109	1-162-282-31	CERAMIC	100PF	10%	50V
C110	1-162-282-31	CERAMIC	100PF	10%	50V
C151	1-162-288-31	(West Germany) ...CERAMIC	330PF	10%	50V
C152	1-162-282-31	CERAMIC	100PF	10%	50V
C153	1-162-282-31	CERAMIC	100PF	10%	50V
C154	1-124-925-11	ELECT	2.2MF	20%	50V
C155	1-130-473-00	MYLAR	0.0015MF	5%	50V
C156	1-130-480-00	MYLAR	0.0056MF	5%	50V
C157	1-124-925-11	ELECT	2.2MF	20%	50V

Ref.No.	Part No.	Description			
C158	1-124-963-11	ELECT	33MF	20%	16V
C159	1-162-282-31	CERAMIC	100PF	10%	50V
C160	1-162-282-31	CERAMIC	100PF	10%	50V
C221	1-124-925-11	ELECT	2.2MF	20%	50V
C222	1-123-611-00	ELECT	1MF	20%	50V
C223	1-123-875-11	ELECT	10MF	20%	50V
C224	1-123-611-00	ELECT	1MF	20%	50V
C225	1-161-379-00	CERAMIC	0.01MF	30%	16V
C226	1-125-486-11	DOUBLE LAYERS	22OMF		5.5V
C227	1-126-103-11	ELECT	470MF	20%	16V
C228	1-136-153-00	FILM	0.01MF	5%	50V
C229	1-136-153-00	FILM	0.01MF	5%	50V
C301	1-162-294-31	CERAMIC	0.001MF	10%	50V
C302	1-162-294-31	CERAMIC	0.001MF	10%	50V
C303	1-162-294-31	CERAMIC	0.001MF	10%	50V
C304	1-162-294-31	CERAMIC	0.001MF	10%	50V
C305	1-124-463-00	ELECT	0.1MF	20%	50V
C306	1-162-282-31	CERAMIC	100PF	10%	50V
C307	1-162-282-31	CERAMIC	100PF	10%	50V
C308	1-162-294-31	CERAMIC	0.001MF	10%	50V
C309	1-162-294-31	CERAMIC	0.001MF	10%	50V
C310	1-123-611-00	ELECT	1MF	20%	50V
C311	1-161-379-00	CERAMIC	0.01MF	30%	16V
C312	1-123-611-00	ELECT	1MF	20%	50V
C313	1-161-494-00	CERAMIC	0.022MF		25V
C314	1-124-462-00	ELECT	10MF	20%	16V
C315	1-124-462-00	ELECT	10MF	20%	16V
C316	1-162-282-31	CERAMIC	100PF	10%	50V
C317	1-162-282-31	CERAMIC	100PF	10%	50V
C318	1-162-215-31	CERAMIC	47PF	5%	50V
C319	1-162-215-31	CERAMIC	47PF	5%	50V
C322	1-124-462-00	ELECT	10MF	20%	16V
C327	1-124-463-00	ELECT	0.1MF	20%	50V
C328	1-161-379-00	CERAMIC	0.01MF	30%	16V
C329	1-161-379-00	CERAMIC	0.01MF	30%	16V
C330	1-161-379-00	CERAMIC	0.01MF	30%	16V
C331	1-124-462-00	ELECT	10MF	20%	16V
C332	1-162-284-31	CERAMIC	150PF	10%	50V
C333	1-162-284-31	CERAMIC	150PF	10%	50V
C334	1-123-611-00	ELECT	1MF	20%	50V
C335	1-124-462-00	ELECT	10MF	20%	16V
C336	1-123-611-00	ELECT	1MF	20%	50V
C337	1-124-463-00	ELECT	0.1MF	20%	50V
C338	1-123-611-00	ELECT	1MF	20%	50V
C339	1-124-463-00	ELECT	0.1MF	20%	50V

Ref.No.	Part No.	Description			
C340	1-162-294-31	CERAMIC	0.001MF	10%	50V
C345	1-161-379-00	CERAMIC	0.01MF	30%	16V
C401	1-162-282-31	CERAMIC	100PF	10%	50V
C402	1-123-611-00	ELECT	1MF	20%	50V
C403	1-123-611-00	ELECT	1MF	20%	50V
C405	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C406	1-162-294-31	CERAMIC	0.001MF	10%	50V
C407	1-161-377-00	CERAMIC	0.0047MF	30%	16V
C408	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C409	1-136-155-00	FILM	0.015MF	5%	50V
C410	1-161-329-00	CERAMIC	0.0068MF	30%	16V
C411	1-136-159-00	FILM	0.033MF	5%	50V
C412	1-136-155-00	FILM	0.015MF	5%	50V
C413	1-136-163-00	FILM	0.068MF	5%	50V
C414	1-136-159-00	FILM	0.033MF	5%	50V
C415	1-124-464-11	ELECT	0.22MF	20%	50V
C416	1-136-163-00	FILM	0.068MF	5%	50V
C417	1-123-611-00	ELECT	1MF	20%	50V
C418	1-124-463-00	ELECT	0.1MF	20%	50V
C419	1-124-462-00	ELECT	10MF	20%	16V
C420	1-123-611-00	ELECT	1MF	20%	50V
C421	1-162-282-31	CERAMIC	100PF	10%	50V
C448	1-162-282-31	(West Germany) ...CERAMIC	100PF	10%	50V
C451	1-162-282-31	CERAMIC	100PF	10%	50V
C452	1-123-611-00	ELECT	1MF	20%	50V
C453	1-123-611-00	ELECT	1MF	20%	50V
C455	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C456	1-162-294-31	CERAMIC	0.001MF	10%	50V
C457	1-161-377-00	CERAMIC	0.0047MF	30%	16V
C458	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C459	1-136-155-00	FILM	0.015MF	5%	50V
C460	1-161-329-00	CERAMIC	0.0068MF	30%	16V
C461	1-136-159-00	FILM	0.033MF	5%	50V
C462	1-136-155-00	FILM	0.015MF	5%	50V
C463	1-136-163-00	FILM	0.068MF	5%	50V
C464	1-136-159-00	FILM	0.033MF	5%	50V
C465	1-124-464-11	ELECT	0.22MF	20%	50V
C466	1-136-163-00	FILM	0.068MF	5%	50V
C467	1-123-611-00	ELECT	1MF	20%	50V
C468	1-124-463-00	ELECT	0.1MF	20%	50V
C469	1-124-462-00	ELECT	10MF	20%	16V
C470	1-123-611-00	ELECT	1MF	20%	50V
C471	1-162-282-31	CERAMIC	100PF	10%	50V
C498	1-162-282-31	(West Germany) ...CERAMIC	100PF	10%	50V
C501	1-124-462-00	ELECT	10MF	20%	16V
C502	1-124-462-00	ELECT	10MF	20%	16V
C503	1-124-234-00	ELECT	22MF	20%	16V
C504	1-124-234-00	ELECT	22MF	20%	16V
C505	1-124-236-00	ELECT	47MF	20%	16V
C506	1-124-462-00	ELECT	10MF	20%	16V
C507	1-124-462-00	ELECT	10MF	20%	16V
C508	1-124-463-00	ELECT	0.1MF	20%	50V
C509	1-124-465-00	ELECT	0.47MF	20%	50V
C510	1-161-329-00	CERAMIC	0.0068MF	30%	16V
C511	1-161-329-00	CERAMIC	0.0068MF	30%	16V
C512	1-136-163-00	FILM	0.068MF	5%	50V

Ref.No.	Part No.	Description			
C513	1-124-463-00	ELECT	0.1MF	20%	50V
C514	1-136-159-00	FILM	0.033MF	5%	50V
C515	1-124-463-00	ELECT	0.1MF	20%	50V
C516	1-161-329-00	CERAMIC	0.0068MF	30%	16V
C517	1-161-329-00	CERAMIC	0.0068MF	30%	16V
C518	1-124-465-00	ELECT	0.47MF	20%	50V
C519	1-162-292-31	CERAMIC	680PF	10%	50V
C520	1-162-292-31	CERAMIC	680PF	10%	50V
C521	1-161-377-00	CERAMIC	0.0047MF	30%	16V
C522	1-124-464-11	ELECT	0.22MF	20%	50V
C523	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C524	1-124-464-11	ELECT	0.22MF	20%	50V
C525	1-162-294-31	CERAMIC	0.001MF	10%	50V
C526	1-124-465-00	ELECT	0.47MF	20%	50V
C527	1-162-288-31	CERAMIC	330PF	10%	50V
C528	1-161-379-00	CERAMIC	0.01MF	30%	16V
C529	1-124-234-00	ELECT	22MF	20%	16V
C530	1-124-462-00	ELECT	10MF	20%	16V
C531	1-124-462-00	ELECT	10MF	20%	16V
C532	1-124-462-00	ELECT	10MF	20%	16V
C551	1-162-294-31	CERAMIC	0.001MF	10%	50V
C552	1-162-294-31	CERAMIC	0.001MF	10%	50V
C553	1-162-294-31	CERAMIC	0.001MF	10%	50V
C601	1-136-165-00	FILM	0.1MF	5%	50V
C602	1-136-165-00	FILM	0.1MF	5%	50V
C603	1-123-611-00	ELECT	1MF	20%	50V
C604	1-124-462-00	ELECT	10MF	20%	16V
C605	1-162-282-31	CERAMIC	100PF	10%	50V
C606	1-162-288-31	CERAMIC	330PF	10%	50V
C610	1-124-963-11	ELECT	33MF	20%	16V
C611	1-124-598-11	ELECT	22MF	20%	25V
C612	1-124-463-00	ELECT	0.1MF	20%	50V
C621	1-123-611-00	ELECT	1MF	20%	50V
C622	1-162-282-31	CERAMIC	100PF	10%	50V
C623	1-162-282-31	CERAMIC	100PF	10%	50V
C624	1-124-122-11	ELECT	100MF	20%	50V
C625	1-124-910-11	ELECT	47MF	20%	50V
C626	1-136-165-00	FILM	0.1MF	5%	50V
C628	1-136-165-00	(West Germany)...FILM	0.1MF	5%	50V
C630	1-123-875-11	ELECT	10MF	20%	50V
C631	1-124-122-11	ELECT	100MF	20%	50V
C632	1-123-875-11	ELECT	10MF	20%	50V
C651	1-136-165-00	FILM	0.1MF	5%	50V
C652	1-136-165-00	FILM	0.1MF	5%	50V
C653	1-123-611-00	ELECT	1MF	20%	50V
C654	1-124-462-00	ELECT	10MF	20%	16V
C655	1-162-282-31	CERAMIC	100PF	10%	50V
C656	1-162-288-31	CERAMIC	330PF	10%	50V
C671	1-123-611-00	ELECT	1MF	20%	50V
C672	1-162-282-31	CERAMIC	100PF	10%	50V
C673	1-162-282-31	CERAMIC	100PF	10%	50V
C674	1-124-122-11	ELECT	100MF	20%	50V
C675	1-124-910-11	ELECT	47MF	20%	50V
C676	1-136-165-00	FILM	0.1MF	5%	50V
C678	1-136-165-00	(West Germany)...FILM	0.1MF	5%	50V
C701	1-124-245-00	ELECT	4.7MF	20%	35V
C702	1-124-120-11	ELECT	220MF	20%	16V

Ref.No.	Part No.	Description			
C703	1-124-120-11	ELECT	220MF	20%	16V
C704	1-161-379-00	CERAMIC	0.01MF	30%	16V
C705	1-161-494-00	CERAMIC	0.022MF		25V
C706	1-124-910-11	ELECT	47MF	20%	50V
C751	1-124-245-00	ELECT	4.7MF	20%	35V
C901	1-126-224-11	ELECT	4700MF	20%	42V
C902	1-126-224-11	ELECT	4700MF	20%	42V
C903	1-124-927-11	ELECT	4.7MF	20%	50V
C904	1-136-165-00	FILM	0.1MF	5%	50V
C905	1-136-165-00	FILM	0.1MF	5%	50V
C906	1-126-103-11	ELECT	470MF	20%	16V
C907	1-123-875-11	ELECT	10MF	20%	50V
C908	1-124-563-11	ELECT	2200MF	20%	25V
C909	1-124-563-11	ELECT	2200MF	20%	25V
C910	1-136-153-00	FILM	0.01MF	5%	50V
C911	1-136-153-00	FILM	0.01MF	5%	50V
C912	1-101-006-00	CERAMIC	0.047MF		50V
C913	1-101-006-00	(West Germany) ...CERAMIC	0.047MF		50V
C951	1-124-499-11	ELECT	1MF	20%	50V
C952	1-124-499-11	ELECT	1MF	20%	50V
C953	1-162-294-31	CERAMIC	0.001MF	10%	50V
C954	1-124-927-11	ELECT	4.7MF	20%	50V
C955	1-124-910-11	ELECT	47MF	20%	50V
C956	1-124-360-00	ELECT	1000MF	20%	16V
C957	1-123-875-11	ELECT	10MF	20%	50V
C958	⚠1-162-578-00	CERAMIC	0.0047MF	20%	400V
C959	1-136-153-00	FILM	0.01MF	5%	50V
C960	1-124-908-11	ELECT	22MF	20%	50V
CN101	*1-566-858-11	SOCKET, CONNECTOR 11P			
CN102	1-564-610-21	CONNECTOR, BOARD TO BOARD			
CN103	*1-565-291-11	SOCKET, CONNECTOR 13P			
CN104	*1-506-979-21	CONNECTOR, BOARD TO BOARD 13P			
CN201	*1-564-499-11	PIN, CONNECTOR 6P			
CN202	*1-564-501-11	PIN, CONNECTOR 8P			
CN203	*1-564-500-11	PIN, CONNECTOR 7P			
CN401	*1-564-501-11	PIN, CONNECTOR 8P			
CN403	*1-564-501-11	PIN, CONNECTOR 8P			
CN405	*1-564-495-11	PIN, CONNECTOR 2P			
CN601	*1-564-497-11	PIN, CONNECTOR 4P			
CN602	*1-564-521-11	PLUG, CONNECTOR 6P			
CN603	*1-564-517-11	PLUG, CONNECTOR 2P			
CN604	*1-564-520-11	PLUG, CONNECTOR 5P			
CN651	*1-562-249-00	SOCKET, CONNECTOR 4P			
CN652	*1-564-337-00	PIN, CONNECTOR 3P			
CN691	1-564-980-11	PIN, CONNECTOR 4P			
CN801	*1-564-495-11	PIN, CONNECTOR 2P			
CN901	*1-564-517-21	PLUG, CONNECTOR 2P			
CN951	*1-564-340-00	PIN, CONNECTOR 6P			
CN952	*1-564-337-00	PIN, CONNECTOR 3P			
D201	8-719-000-26	DIODE US1060M			
D202	8-719-000-26	DIODE US1060M			
D203	8-719-000-26	DIODE US1060M			
D204	8-719-000-26	DIODE US1060M			
D205	8-719-000-26	DIODE US1060M			
D206	8-719-000-26	DIODE US1060M			
D207	8-719-000-26	DIODE US1060M			
D301	8-719-000-26	DIODE US1060M			
D303	8-719-000-26	DIODE US1060M			

Ref.No.	Part No.	Description
D304	8-719-000-26	DIODE US1060M
D305	8-719-000-26	DIODE US1060M
D306	8-719-000-26	DIODE US1060M
D307	8-719-000-26	DIODE US1060M
D308	8-719-000-26	DIODE US1060M
D309	8-719-000-26	DIODE US1060M
D310	8-719-000-26	DIODE US1060M
D311	8-719-000-26	DIODE US1060M
D313	8-719-301-60	DIODE SEL2910A-C
D314	8-719-301-60	DIODE SEL2910A-C
D315	8-719-301-60	DIODE SEL2910A-C
D316	8-719-301-60	DIODE SEL2910A-C
D317	8-719-301-60	DIODE SEL2910A-C
D318	8-719-301-60	DIODE SEL2910A-C
D319	8-719-301-48	DIODE SEL2413E-D
D320	8-719-301-48	DIODE SEL2413E-D
D321	8-719-301-48	DIODE SEL2413E-D
D322	8-719-301-48	DIODE SEL2413E-D
D323	8-719-000-63	DIODE UZL6M3
D324	8-719-302-87	DIODE SEL2913K-C
D325	8-719-000-26	DIODE US1060M
D501	8-719-000-26	DIODE US1060M
D502	8-719-000-26	DIODE US1060M
D503	8-719-000-26	DIODE US1060M
D504	8-719-000-26	DIODE US1060M
D505	8-719-000-26	DIODE US1060M
D506	8-719-000-26	DIODE US1060M
D507	8-719-000-26	DIODE US1060M
D508	8-719-000-26	DIODE US1060M
D509	8-719-000-26	DIODE US1060M
D510	8-719-000-26	DIODE US1060M
D511	8-719-109-79	DIODE RD4.7ES-B
D601	8-719-000-26	DIODE US1060M
D651	8-719-000-26	DIODE US1060M
D701	8-719-000-26	DIODE US1060M
D901	8-719-302-38	DIODE RBV-602-01
D902	8-719-000-26	DIODE US1060M
D903	8-719-200-02	DIODE 10E2
D904	8-719-200-02	DIODE 10E2
D905	8-719-200-02	DIODE 10E2
D906	8-719-200-02	DIODE 10E2
D907	8-719-000-26	DIODE US1060M
D908	8-719-000-26	DIODE US1060M
D909	8-719-000-26	DIODE US1060M
D910	8-719-000-26	DIODE US1060M
D951	8-719-200-02	DIODE 10E2
D952	8-719-200-02	DIODE 10E2
D953	8-719-200-02	DIODE 10E2
D954	8-719-200-02	DIODE 10E2
D955	8-719-000-26	DIODE US1060M
D956	8-719-000-26	DIODE US1060M
D957	8-719-000-26	DIODE US1060M
D958	8-719-000-26	DIODE US1060M
D959	8-719-000-26	DIODE US1060M
D960	8-719-301-38	DIODE SEL2210S-C
D961	8-719-000-26	DIODE US1060M
D962	8-719-000-26	DIODE US1060M

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description
DP101	*1-562-251-00	SOCKET, CONNECTOR 6P
F951	⚠1-532-285-00	FUSE, TIME-LAG
F952	⚠1-532-285-00	(E,Saudi Arabia)...FUSE, TIME-LAG
IC101	8-759-600-02	IC M5218L
IC102	8-759-800-33	IC LC7815H
IC301	8-759-804-48	IC LC7060AN
IC302	8-759-600-02	IC M5218L
IC303	8-759-602-60	IC M50765-440SP
IC401	8-759-600-02	IC M5218L
IC402	8-759-804-49	IC LC7522
IC403	8-759-113-18	IC UPC4574C
IC404	8-759-805-12	IC LC7560B
IC405	8-759-204-30	IC TC9176P
IC601	8-759-600-02	IC M5218L
IC602	8-749-941-52	IC STK4152II
IC701	8-759-111-68	IC UPC1237HA
IC901	8-759-604-84	IC M5F7806
IC902	8-759-604-32	IC M5F7810
IC903	8-759-604-50	IC M5F7910
IC951	8-759-820-50	IC LC6528C-3649
IC952	8-759-604-84	IC M5F7806
ICP101	1-532-841-21	LINK, IC
ICP901	1-532-846-21	LINK, IC
ICP902	1-532-846-21	LINK, IC
J101	1-507-908-11	JACK, PIN 4P
J801	1-507-974-11	JACK
J851	1-563-951-11	JACK
L501	1-410-564-41	INDUCTOR 100UH
L601	1-410-397-21	(West Germany) ...FERRITE BEAD INDUCTOR 1.1UH
L651	1-410-397-21	(West Germany) ...FERRITE BEAD INDUCTOR 1.1UH
L951	1-410-564-21	INDUCTOR 100UH
LCD1	1-807-813-11	DISPLAY PANEL, LIQUID CRYSTAL
PL401	1-518-527-51	LAMP, PILOT
PL402	1-518-527-51	LAMP, PILOT
Q301	8-729-117-54	TRANSISTOR 2SA1175
Q302	8-729-117-54	TRANSISTOR 2SA1175
Q303	8-729-117-54	TRANSISTOR 2SA1175
Q304	8-729-117-54	TRANSISTOR 2SA1175
Q305	8-729-117-54	TRANSISTOR 2SA1175
Q306	8-729-117-54	TRANSISTOR 2SA1175
Q307	8-729-600-27	TRANSISTOR 2SC634SP
Q308	8-729-600-27	TRANSISTOR 2SC634SP
Q401	8-729-600-27	TRANSISTOR 2SC634SP
Q402	8-729-600-27	TRANSISTOR 2SC634SP
Q403	8-729-600-27	TRANSISTOR 2SC634SP
Q404	8-729-600-27	TRANSISTOR 2SC634SP
Q405	8-729-600-27	TRANSISTOR 2SC634SP
Q406	8-729-600-27	TRANSISTOR 2SC634SP
Q407	8-729-600-27	TRANSISTOR 2SC634SP
Q408	8-729-600-08	TRANSISTOR 2SK381-E
Q409	8-729-600-27	TRANSISTOR 2SC634SP
Q410	8-729-117-54	TRANSISTOR 2SA1175
Q451	8-729-600-27	TRANSISTOR 2SC634SP
Q452	8-729-600-27	TRANSISTOR 2SC634SP
Q453	8-729-600-27	TRANSISTOR 2SC634SP

Ref.No.	Part No.	Description			
Q454	8-729-600-27	TRANSISTOR 2SC634SP			
Q455	8-729-600-27	TRANSISTOR 2SC634SP			
Q456	8-729-600-27	TRANSISTOR 2SC634SP			
Q457	8-729-600-27	TRANSISTOR 2SC634SP			
Q458	8-729-600-08	TRANSISTOR 2SK381-E			
Q459	8-729-600-27	TRANSISTOR 2SC634SP			
Q601	8-729-600-27	TRANSISTOR 2SC634SP			
Q651	8-729-600-27	TRANSISTOR 2SC634SP			
Q691	8-729-117-54	TRANSISTOR 2SA1175			
Q701	8-729-108-05	TRANSISTOR 2SC1841-PA			
Q702	8-729-117-54	TRANSISTOR 2SA1175			
Q751	8-729-108-05	TRANSISTOR 2SC1841-PA			
Q951	8-729-115-15	TRANSISTOR BN1A4M			
Q952	8-729-600-27	TRANSISTOR 2SC634SP			
Q953	8-729-801-83	TRANSISTOR 2SB1013			
Q954	8-729-117-54	TRANSISTOR 2SA1175			
R101	1-249-417-11	CARBON	1K	5%	1/4W
R102	1-249-417-11	CARBON	1K	5%	1/4W
R103	1-249-438-11	CARBON	56K	5%	1/4W
R104	1-249-418-11	CARBON	1.2K	5%	1/4W
R105	1-249-437-11	CARBON	47K	5%	1/4W
R106	1-215-487-00	CARBON	560K	5%	1/4W
R107	1-249-421-11	CARBON	2.2K	5%	1/4W
R108	1-249-411-11	CARBON	330	5%	1/4W
R109	1-249-433-11	CARBON	22K	5%	1/4W
R151	1-249-417-11	CARBON	1K	5%	1/4W
R152	1-249-417-11	CARBON	1K	5%	1/4W
R153	1-249-438-11	CARBON	56K	5%	1/4W
R154	1-249-418-11	CARBON	1.2K	5%	1/4W
R155	1-249-437-11	CARBON	47K	5%	1/4W
R156	1-215-487-00	CARBON	560K	5%	1/4W
R157	1-249-421-11	CARBON	2.2K	5%	1/4W
R158	1-249-411-11	CARBON	330	5%	1/4W
R159	1-249-433-11	CARBON	22K	5%	1/4W
R201	1-247-891-00	CARBON	330K	5%	1/4W
R202	1-247-891-00	CARBON	330K	5%	1/4W
R203	1-249-429-11	CARBON	10K	5%	1/4W
R204	1-247-891-00	CARBON	330K	5%	1/4W
R206	1-249-417-11	CARBON	1K	5%	1/4W
R207	1-249-428-11	CARBON	8.2K	5%	1/4W
R208	1-249-417-11	CARBON	1K	5%	1/4W
R209	1-249-425-11	CARBON	4.7K	5%	1/4W
R210	1-249-405-11	CARBON	100	5%	1/4W
R211	1-249-437-11	CARBON	47K	5%	1/4W
R221	1-249-441-11	CARBON	100K	5%	1/4W
R222	1-249-417-11	CARBON	1K	5%	1/4W
R223	1-247-895-00	CARBON	470K	5%	1/4W
R224	1-247-895-00	CARBON	470K	5%	1/4W
R225	1-247-891-00	CARBON	330K	5%	1/4W
R251	1-247-891-00	CARBON	330K	5%	1/4W
R252	1-247-891-00	CARBON	330K	5%	1/4W
R253	1-249-429-11	CARBON	10K	5%	1/4W
R254	1-247-891-00	CARBON	330K	5%	1/4W
R256	1-249-417-11	CARBON	1K	5%	1/4W
R257	1-249-428-11	CARBON	8.2K	5%	1/4W
R258	1-249-417-11	CARBON	1K	5%	1/4W
R259	1-249-425-11	CARBON	4.7K	5%	1/4W
R291	1-249-429-11	CARBON	10K	5%	1/4W

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description			
R301	1-249-429-11	CARBON	10K	5%	1/4W
R302	1-249-429-11	CARBON	10K	5%	1/4W
R303	1-249-429-11	CARBON	10K	5%	1/4W
R304	1-249-429-11	CARBON	10K	5%	1/4W
R305	1-247-891-00	CARBON	330K	5%	1/4W
R306	1-247-903-00	CARBON	1M	5%	1/4W
R307	1-249-425-11	CARBON	4.7K	5%	1/4W
R308	1-249-429-11	CARBON	10K	5%	1/4W
R309	1-249-429-11	CARBON	10K	5%	1/4W
R315	1-249-417-11	CARBON	1K	5%	1/4W
R316	1-249-441-11	CARBON	100K	5%	1/4W
R317	1-249-441-11	CARBON	100K	5%	1/4W
R318	1-249-441-11	CARBON	100K	5%	1/4W
R319	1-249-441-11	CARBON	100K	5%	1/4W
R320	1-249-417-11	CARBON	1K	5%	1/4W
R321	1-249-417-11	CARBON	1K	5%	1/4W
R322	1-249-417-11	CARBON	1K	5%	1/4W
R323	1-249-417-11	CARBON	1K	5%	1/4W
R324	1-249-414-11	CARBON	560	5%	1/4W
R325	1-249-429-11	CARBON	10K	5%	1/4W
R326	1-249-429-11	CARBON	10K	5%	1/4W
R327	1-249-429-11	CARBON	10K	5%	1/4W
R328	1-249-429-11	CARBON	10K	5%	1/4W
R329	1-249-423-11	CARBON	3.3K	5%	1/4W
R330	1-249-423-11	CARBON	3.3K	5%	1/4W
R331	1-249-423-11	CARBON	3.3K	5%	1/4W
R332	1-249-423-11	CARBON	3.3K	5%	1/4W
R333	1-249-429-11	CARBON	10K	5%	1/4W
R334	1-249-429-11	CARBON	10K	5%	1/4W
R335	1-249-429-11	CARBON	10K	5%	1/4W
R336	1-249-429-11	CARBON	10K	5%	1/4W
R337	1-249-429-11	CARBON	10K	5%	1/4W
R338	1-249-415-11	CARBON	680	5%	1/4W
R339	1-249-433-11	CARBON	22K	5%	1/4W
R340	1-249-441-11	CARBON	100K	5%	1/4W
R341	1-249-425-11	CARBON	4.7K	5%	1/4W
R342	1-249-429-11	CARBON	10K	5%	1/4W
R343	1-249-417-11	CARBON	1K	5%	1/4W
R344	1-249-434-11	CARBON	27K	5%	1/4W
R345	1-249-434-11	CARBON	27K	5%	1/4W
R346	1-249-426-11	CARBON	5.6K	5%	1/4W
R347	1-249-426-11	CARBON	5.6K	5%	1/4W
R348	1-249-438-11	CARBON	56K	5%	1/4W
R349	1-249-438-11	CARBON	56K	5%	1/4W
R352	1-249-409-11	CARBON	220	5%	1/4W
R353	1-249-409-11	CARBON	220	5%	1/4W
R355	1-249-429-11	CARBON	10K	5%	1/4W
R356	1-249-429-11	CARBON	10K	5%	1/4W
R357	1-249-429-11	CARBON	10K	5%	1/4W
R358	1-249-429-11	CARBON	10K	5%	1/4W
R359	1-249-429-11	CARBON	10K	5%	1/4W
R360	1-249-429-11	CARBON	10K	5%	1/4W
R361	1-249-429-11	CARBON	10K	5%	1/4W
R362	1-249-429-11	CARBON	10K	5%	1/4W
R363	1-249-429-11	CARBON	10K	5%	1/4W
R364	1-249-429-11	CARBON	10K	5%	1/4W
R365	1-249-429-11	CARBON	10K	5%	1/4W

Ref.No.	Part No.	Description			
R366	1-249-410-11	CARBON	270	5%	1/4W
R367	1-249-441-11	CARBON	100K	5%	1/4W
R368	1-249-423-11	CARBON	3.3K	5%	1/4W
R369	1-247-903-00	CARBON	1M	5%	1/4W
R371	1-249-429-11	CARBON	10K	5%	1/4W
R372	1-249-429-11	CARBON	10K	5%	1/4W
R373	1-249-425-11	CARBON	4.7K	5%	1/4W
R374	1-249-409-11	CARBON	220	5%	1/4W
R375	1-249-441-11	CARBON	100K	5%	1/4W
R376	1-249-429-11	CARBON	10K	5%	1/4W
R377	1-249-410-11	CARBON	270	5%	1/4W
R378	1-249-410-11	CARBON	270	5%	1/4W
R379	1-249-410-11	CARBON	270	5%	1/4W
R380	1-249-410-11	CARBON	270	5%	1/4W
R381	1-249-410-11	CARBON	270	5%	1/4W
R382	1-249-417-11	CARBON	1K	5%	1/4W
R383	1-249-441-11	CARBON	100K	5%	1/4W
R384	1-249-429-11	CARBON	10K	5%	1/4W
R385	1-249-429-11	CARBON	10K	5%	1/4W
R386	1-249-429-11	CARBON	10K	5%	1/4W
R388	1-247-903-00	CARBON	1M	5%	1/4W
R401	1-249-429-11	CARBON	10K	5%	1/4W
R402	1-247-903-00	CARBON	1M	5%	1/4W
R403	1-249-429-11	CARBON	10K	5%	1/4W
R405	1-249-430-11	CARBON	12K	5%	1/4W
R406	1-249-416-11	CARBON	820	5%	1/4W
R407	1-249-441-11	CARBON	100K	5%	1/4W
R408	1-247-903-00	CARBON	1M	5%	1/4W
R409	1-247-895-00	CARBON	470K	5%	1/4W
R410	1-247-895-00	CARBON	470K	5%	1/4W
R411	1-249-430-11	CARBON	12K	5%	1/4W
R412	1-249-416-11	CARBON	820	5%	1/4W
R413	1-249-441-11	CARBON	100K	5%	1/4W
R414	1-247-903-00	CARBON	1M	5%	1/4W
R415	1-249-430-11	CARBON	12K	5%	1/4W
R416	1-249-413-11	CARBON	470	5%	1/4W
R417	1-249-441-11	CARBON	100K	5%	1/4W
R418	1-247-903-00	CARBON	1M	5%	1/4W
R419	1-249-430-11	CARBON	12K	5%	1/4W
R420	1-249-414-11	CARBON	560	5%	1/4W
R421	1-249-441-11	CARBON	100K	5%	1/4W
R422	1-247-903-00	CARBON	1M	5%	1/4W
R423	1-249-430-11	CARBON	12K	5%	1/4W
R424	1-249-415-11	CARBON	680	5%	1/4W
R425	1-249-441-11	CARBON	100K	5%	1/4W
R426	1-247-903-00	CARBON	1M	5%	1/4W
R427	1-249-430-11	CARBON	12K	5%	1/4W
R428	1-249-415-11	CARBON	680	5%	1/4W
R429	1-249-441-11	CARBON	100K	5%	1/4W
R430	1-247-903-00	CARBON	1M	5%	1/4W
R431	1-249-430-11	CARBON	12K	5%	1/4W
R432	1-249-415-11	CARBON	680	5%	1/4W
R433	1-249-441-11	CARBON	100K	5%	1/4W
R434	1-247-895-00	CARBON	470K	5%	1/4W
R435	1-247-895-00	CARBON	470K	5%	1/4W
R436	1-247-895-00	CARBON	470K	5%	1/4W
R437	1-247-903-00	CARBON	1M	5%	1/4W

Ref.No.	Part No.	Description				
R438	1-249-421-11	CARBON	2.2K	5%	1/4W	
R439	1-247-887-00	CARBON	220K	5%	1/4W	
R440	1-249-435-11	CARBON	33K	5%	1/4W	
R441	1-249-425-11	CARBON	4.7K	5%	1/4W	
R451	1-249-429-11	CARBON	10K	5%	1/4W	
R452	1-247-903-00	CARBON	1M	5%	1/4W	
R453	1-249-429-11	CARBON	10K	5%	1/4W	
R455	1-249-430-11	CARBON	12K	5%	1/4W	
R456	1-249-416-11	CARBON	820	5%	1/4W	
R457	1-249-441-11	CARBON	100K	5%	1/4W	
R458	1-247-903-00	CARBON	1M	5%	1/4W	
R459	1-247-895-00	CARBON	470K	5%	1/4W	
R460	1-247-895-00	CARBON	470K	5%	1/4W	
R461	1-249-430-11	CARBON	12K	5%	1/4W	
R462	1-249-416-11	CARBON	820	5%	1/4W	
R463	1-249-441-11	CARBON	100K	5%	1/4W	
R464	1-247-903-00	CARBON	1M	5%	1/4W	
R465	1-249-430-11	CARBON	12K	5%	1/4W	
R466	1-249-413-11	CARBON	470	5%	1/4W	
R467	1-249-441-11	CARBON	100K	5%	1/4W	
R468	1-247-903-00	CARBON	1M	5%	1/4W	
R469	1-249-430-11	CARBON	12K	5%	1/4W	
R470	1-249-414-11	CARBON	560	5%	1/4W	
R471	1-249-441-11	CARBON	100K	5%	1/4W	
R472	1-247-903-00	CARBON	1M	5%	1/4W	
R473	1-249-430-11	CARBON	12K	5%	1/4W	
R474	1-249-415-11	CARBON	680	5%	1/4W	
R475	1-249-441-11	CARBON	100K	5%	1/4W	
R476	1-247-903-00	CARBON	1M	5%	1/4W	
R477	1-249-430-11	CARBON	12K	5%	1/4W	
R478	1-249-415-11	CARBON	680	5%	1/4W	
R479	1-249-441-11	CARBON	100K	5%	1/4W	
R480	1-247-903-00	CARBON	1M	5%	1/4W	
R481	1-249-430-11	CARBON	12K	5%	1/4W	
R482	1-249-415-11	CARBON	680	5%	1/4W	
R483	1-249-441-11	CARBON	100K	5%	1/4W	
R484	1-247-895-00	CARBON	470K	5%	1/4W	
R485	1-247-895-00	CARBON	470K	5%	1/4W	
R486	1-247-895-00	CARBON	470K	5%	1/4W	
R487	1-247-903-00	CARBON	1M	5%	1/4W	
R488	1-249-421-11	CARBON	2.2K	5%	1/4W	
R489	1-247-887-00	CARBON	220K	5%	1/4W	
R490	1-249-435-11	CARBON	33K	5%	1/4W	
R491	1-249-425-11	CARBON	4.7K	5%	1/4W	
R501	1-249-409-11	CARBON	220	5%	1/4W	
R502	1-249-409-11	CARBON	220	5%	1/4W	
R505	1-249-429-11	CARBON	10K	5%	1/4W	
R506	1-249-429-11	CARBON	10K	5%	1/4W	
R507	1-249-437-11	CARBON	47K	5%	1/4W	
R508	1-249-437-11	CARBON	47K	5%	1/4W	
R509	1-247-895-00	CARBON	470K	5%	1/4W	
R510	1-249-431-11	CARBON	15K	5%	1/4W	
R511	1-247-903-00	CARBON	1M	5%	1/4W	
R512	1-249-439-11	CARBON	68K	5%	1/4W	
R513	1-249-435-11	CARBON	33K	5%	1/4W	
R514	1-247-895-00	CARBON	470K	5%	1/4W	
R515	1-249-432-11	CARBON	18K	5%	1/4W	
R516	1-247-903-00	CARBON	1M	5%	1/4W	
R517	1-249-430-11	CARBON	12K	5%	1/4W	
R518	1-247-903-00	CARBON	1M	5%	1/4W	
R519	1-249-438-11	CARBON	56K	5%	1/4W	
R520	1-249-424-11	CARBON	3.9K	5%	1/4W	
R521	1-247-883-00	CARBON	150K	5%	1/4W	
R522	1-249-409-11	CARBON	220	5%	1/4W	
R523	1-247-903-00	CARBON	1M	5%	1/4W	
R524	1-249-436-11	CARBON	39K	5%	1/4W	
R525	1-249-432-11	CARBON	18K	5%	1/4W	
R526	1-247-889-00	CARBON	270K	5%	1/4W	
R527	1-249-431-11	CARBON	15K	5%	1/4W	
R528	1-247-903-00	CARBON	1M	5%	1/4W	
R529	1-249-429-11	CARBON	10K	5%	1/4W	
R530	1-247-903-00	CARBON	1M	5%	1/4W	
R531	1-249-432-11	CARBON	18K	5%	1/4W	
R532	1-247-903-00	CARBON	1M	5%	1/4W	
R535	1-247-903-00	CARBON	1M	5%	1/4W	
R536	1-247-891-00	CARBON	330K	5%	1/4W	
R537	1-247-903-00	CARBON	1M	5%	1/4W	
R538	1-247-887-00	CARBON	220K	5%	1/4W	
R544	1-249-411-11	CARBON	330	5%	1/4W	
R551	1-249-426-11	CARBON	5.6K	5%	1/4W	
R601	1-249-431-11	CARBON	15K	5%	1/4W	
R602	1-249-421-11	CARBON	2.2K	5%	1/4W	
R603	1-247-895-00	CARBON	470K	5%	1/4W	
R604	1-249-421-11	CARBON	2.2K	5%	1/4W	
R605	1-249-425-11	CARBON	4.7K	5%	1/4W	
R606	1-247-903-00	CARBON	1M	5%	1/4W	
R607	1-249-429-11	CARBON	10K	5%	1/4W	
R608	1-249-429-11	CARBON	10K	5%	1/4W	
R619	1-249-417-11	CARBON	1K	5%	1/4W	
R620	1-249-417-11	CARBON	1K	5%	1/4W	
R621	1-249-414-11	CARBON	560	5%	1/4W	
R622	1-249-441-11	CARBON	100K	5%	1/4W	
R623	1-247-903-00	CARBON	1M	5%	1/4W	
R624	1-249-429-11	CARBON	10K	5%	1/4W	
R631	1-249-425-11	CARBON	4.7K	5%	1/4W	
R632	1-249-438-11	CARBON	56K	5%	1/4W	
R633	1-249-438-11	CARBON	56K	5%	1/4W	
R634	1-249-414-11	CARBON	560	5%	1/4W	
R635	1-247-756-11	CARBON	2.2K	5%	1/2W	
R636	1-247-756-11	CARBON	2.2K	5%	1/2W	
R637	⚠.1-247-727-11	CARBON	10	5%	1/2W	F
R638	1-249-420-11	CARBON	1.8K	5%	1/4W	
R639	⚠.1-136-165-00	(West Germany)...CARBON	10	5%	1/2W	F
R640	1-247-752-11	CARBON	1K	5%	1/2W	
R641	1-247-752-11	CARBON	1K	5%	1/2W	
R642	⚠.1-212-881-11	FUSIBLE	100	5%	1/4W	F
R643	⚠.1-212-881-11	FUSIBLE	100	5%	1/4W	F
R651	1-249-431-11	CARBON	15K	5%	1/4W	
R652	1-249-421-11	CARBON	2.2K	5%	1/4W	
R653	1-247-895-00	CARBON	470K	5%	1/4W	
R654	1-249-421-11	CARBON	2.2K	5%	1/4W	
R655	1-249-425-11	CARBON	4.7K	5%	1/4W	
R656	1-247-903-00	CARBON	1M	5%	1/4W	
R657	1-249-429-11	CARBON	10K	5%	1/4W	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				
R658	1-249-429-11	CARBON	10K	5%	1/4W	
R681	1-249-425-11	CARBON	4.7K	5%	1/4W	
R682	1-249-438-11	CARBON	56K	5%	1/4W	
R683	1-249-438-11	CARBON	56K	5%	1/4W	
R684	1-249-414-11	CARBON	560	5%	1/4W	
R685	1-247-756-11	CARBON	2.2K	5%	1/2W	
R686	1-247-756-11	CARBON	2.2K	5%	1/2W	
R687	⚠.1-247-727-11	CARBON	10	5%	1/2W	F
R688	1-249-420-11	CARBON	1.8K	5%	1/4W	
R689	⚠.1-136-165-00	(West Germany)...CARBON 10 5% 1/2W F				
R691	1-249-417-11	CARBON	1K	5%	1/4W	
R692	1-249-439-11	CARBON	68K	5%	1/4W	
R693	1-249-441-11	CARBON	100K	5%	1/4W	
R701	1-217-151-00	RES, METAL PLATE 0.22				
R702	1-249-414-11	CARBON	560	5%	1/4W	
R703	1-249-414-11	CARBON	560	5%	1/4W	
R704	1-247-881-00	CARBON	120K	5%	1/4W	
R705	1-249-441-11	CARBON	100K	5%	1/4W	
R706	1-249-433-11	CARBON	22K	5%	1/4W	
R707	1-249-429-11	CARBON	10K	5%	1/4W	
R708	1-249-433-11	CARBON	22K	5%	1/4W	
R709	1-249-433-11	CARBON	22K	5%	1/4W	
R710	⚠.1-247-744-11	CARBON	270	5%	1/2W	F
R711	1-249-429-11	CARBON	10K	5%	1/4W	
R712	1-249-437-11	CARBON	47K	5%	1/4W	
R751	1-217-151-00	RES, METAL PLATE 0.22				
R752	1-249-414-11	CARBON	560	5%	1/4W	
R753	1-249-414-11	CARBON	560	5%	1/4W	
R754	1-247-881-00	CARBON	120K	5%	1/4W	
R851	⚠.1-247-236-00	CARBON	680	5%	1/2W	F
R852	⚠.1-247-236-00	CARBON	680	5%	1/2W	F
R901	1-249-426-11	CARBON	5.6K	5%	1/4W	
R902	⚠.1-213-078-61	FUSIBLE	56	5%	1W	F
R936	1-249-393-11	CARBON	10	5%	1/4W	
R951	1-249-425-11	CARBON	4.7K	5%	1/4W	
R952	1-249-426-11	CARBON	5.6K	5%	1/4W	
R953	1-249-429-11	CARBON	10K	5%	1/4W	
R954	1-249-429-11	CARBON	10K	5%	1/4W	
R955	1-249-417-11	CARBON	1K	5%	1/4W	
R956	1-249-429-11	CARBON	10K	5%	1/4W	
R957	1-249-429-11	CARBON	10K	5%	1/4W	
R958	1-249-430-11	CARBON	12K	5%	1/4W	
R959	1-249-441-11	CARBON	100K	5%	1/4W	
R960	1-249-425-11	CARBON	4.7K	5%	1/4W	
R961	1-249-425-11	CARBON	4.7K	5%	1/4W	
R962	1-249-427-11	CARBON	6.8K	5%	1/4W	
R963	1-249-429-11	CARBON	10K	5%	1/4W	
R964	1-249-411-11	CARBON	330	5%	1/4W	
R965	1-249-429-11	CARBON	10K	5%	1/4W	
R966	1-249-425-11	CARBON	4.7K	5%	1/4W	
R967	1-249-419-11	CARBON	1.5K	5%	1/4W	

Ref.No.	Part No.	Description
RV301	1-237-646-11	RES, VAR, SLIDE 50K
RV302	1-237-647-11	RES, VAR, SLIDE 100K
RY701	1-515-503-00	RELAY
RY951	⚠1-515-516-00	(UK,West Germany)...RELAY
RY951	⚠1-515-601-11	(E,Saudi Arabia)....RELAY
S301	1-554-303-21	SWITCH, KEY BOARD (63Hz)
S302	1-554-303-21	SWITCH, KEY BOARD (150Hz)
S303	1-554-303-21	SWITCH, KEY BOARD (400Hz)
S304	1-554-303-21	SWITCH, KEY BOARD (1kHz)
S305	1-554-303-21	SWITCH, KEY BOARD (3kHz)
S306	1-554-303-21	SWITCH, KEY BOARD (6kHz)
S307	1-554-303-21	SWITCH, KEY BOARD (14kHz)
S308	1-554-303-21	SWITCH, KEY BOARD (EQ PRESET 1)
S309	1-554-303-21	SWITCH, KEY BOARD (EQ PRESET 2)
S310	1-554-303-21	SWITCH, KEY BOARD (EQ PRESET 3)
S311	1-554-303-21	SWITCH, KEY BOARD (EQ FLAT)
S312	1-554-303-21	SWITCH, KEY BOARD (DISPLAY)
S313	1-554-303-21	SWITCH, KEY BOARD (EQ MEMORY)
S314	1-554-303-21	SWITCH, KEY BOARD (EQ LEVEL -)
S315	1-554-303-21	SWITCH, KEY BOARD (EQ LEVEL +)
S316	1-554-303-21	SWITCH, KEY BOARD (TAPE)
S317	1-554-303-21	SWITCH, KEY BOARD (CD)
S318	1-554-303-21	SWITCH, KEY BOARD (TUNER)
S319	1-554-303-21	SWITCH, KEY BOARD (PHONO)
S320	1-554-303-21	SWITCH, KEY BOARD (VOLUME/+)
S321	1-554-303-21	SWITCH, KEY BOARD (VOLUME/-)
S322	1-554-303-21	SWITCH, KEY BOARD (MUTING)
S323	1-554-419-00	SWITCH, PUSH (1 KEY)(DBFB,SAT)
S951	1-554-303-21	SWITCH, KEY BOARD (POWER)
S952	⚠1-571-437-11	(E,Saudi Arabia) ....SWITCH, POWER VOLTAGE CHANGE
T901	⚠.1-448-879-11	(E,Saudi Arabia)....TRANSFORMER, POWER
T901	⚠.1-448-880-11	(UK,West Germany)...TRANSFORMER, POWER
T951	⚠.1-449-194-11	TRANSFORMER, POWER
TM901	1-536-705-00	TERMINAL BOARD (SP)
VZ951	⚠1-807-180-31	VARISTOR SNR-14A471U
X301	1-527-532-00	OSCILLATOR, CERAMIC
X302	1-527-532-00	OSCILLATOR, CERAMIC
X951	1-567-819-11	VIBRATOR, CERAMIC

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.